Chilton's
Food Engineering International

6/1981

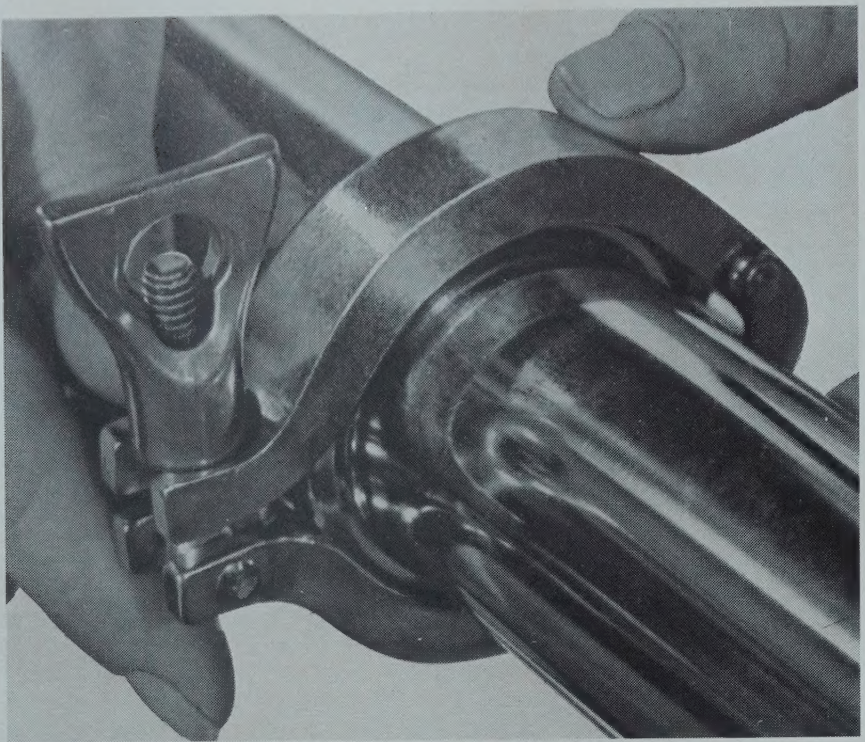
D

CAN MEXICO MEET LOFTY FOOD GOALS?

Kann Mexiko hochgesteckte Lebensmittel ziele erreichen?

Le Mexique peut-il atteindre des buts de production élevés?

¿Puede Méjico alcanzar altos objectivos en la alimentación?



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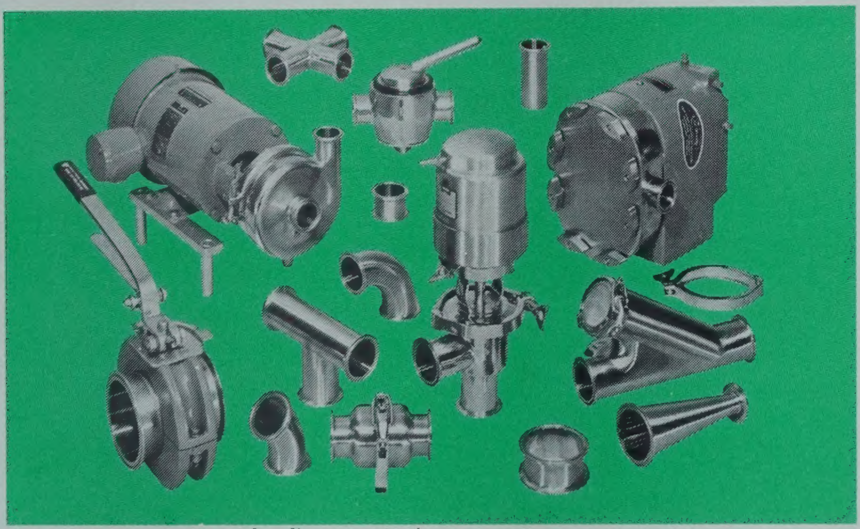

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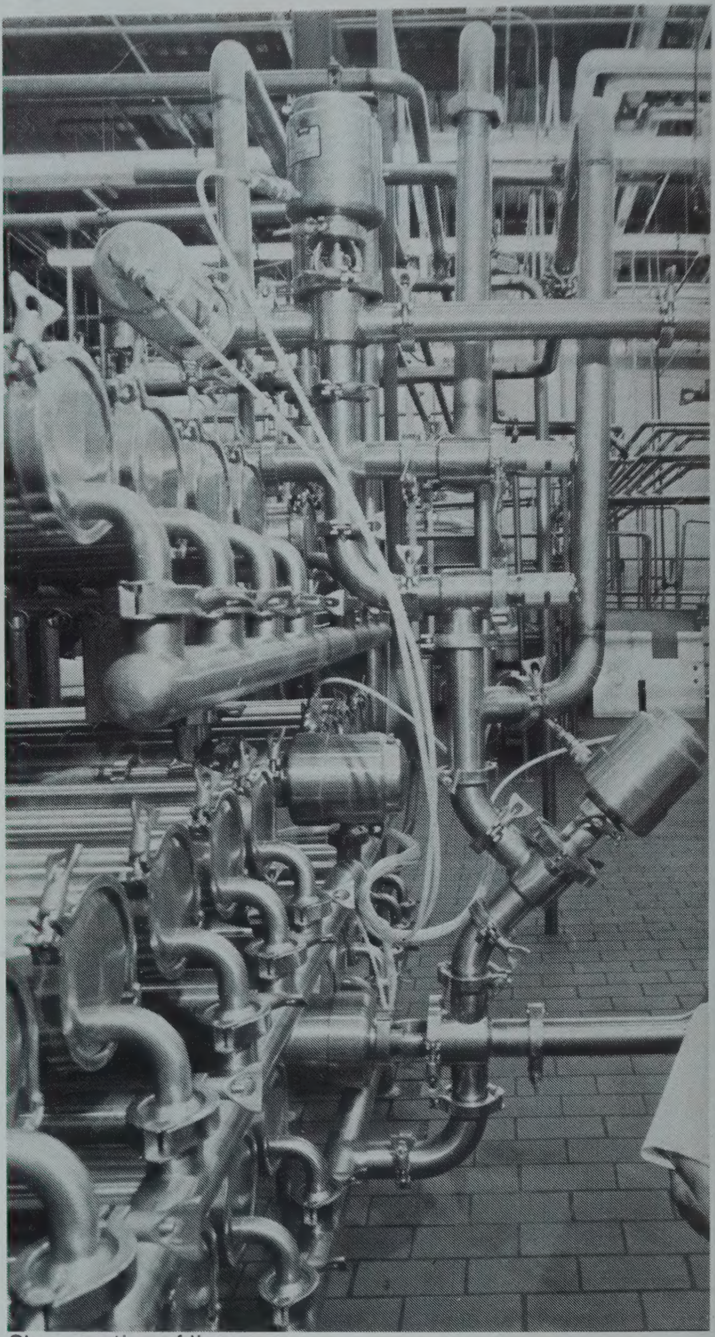

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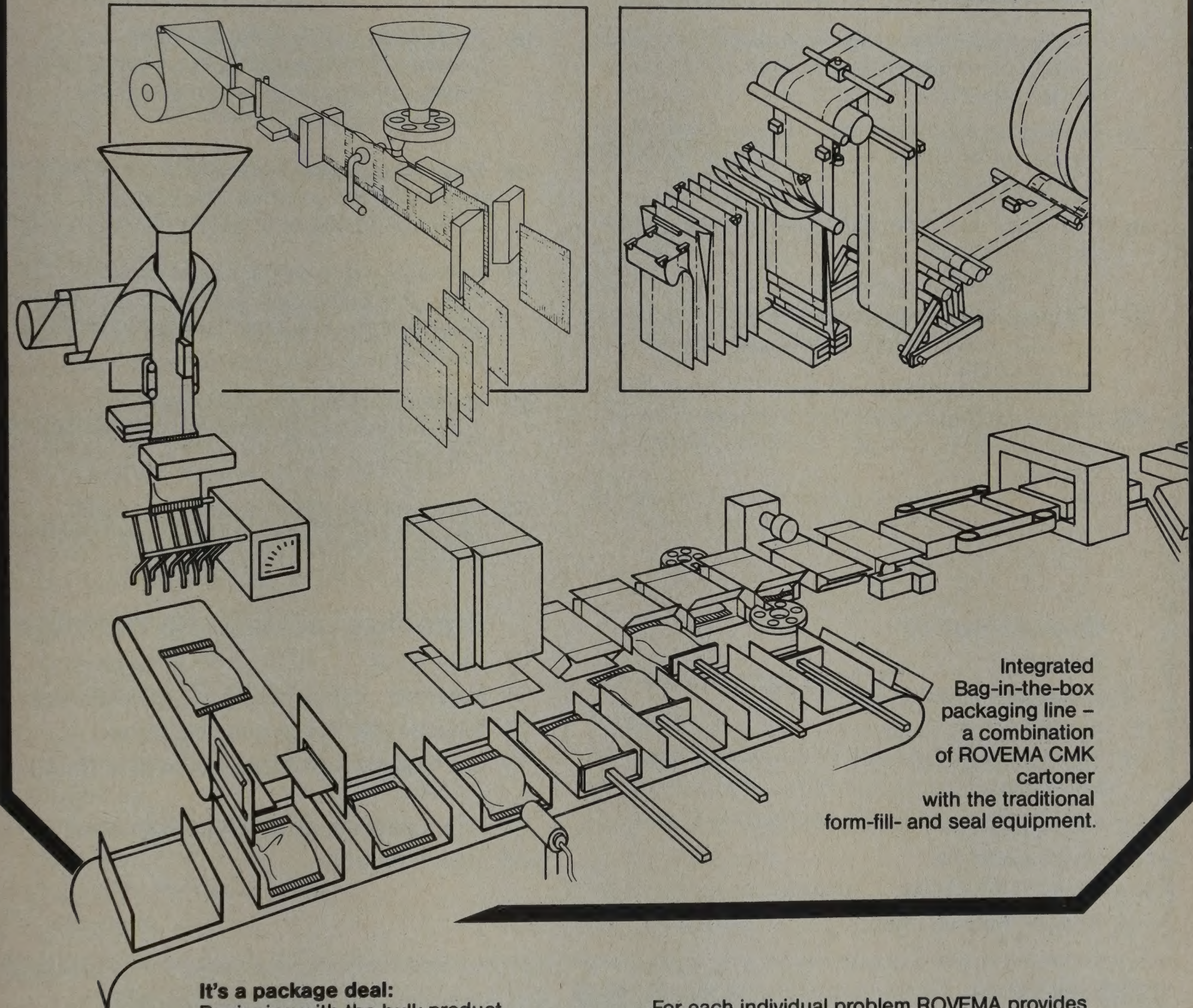

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INTERNATIONAL

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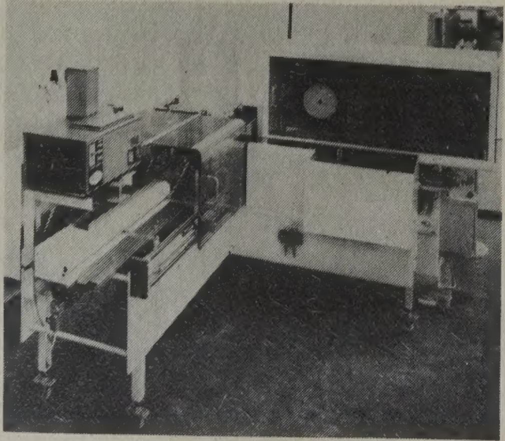

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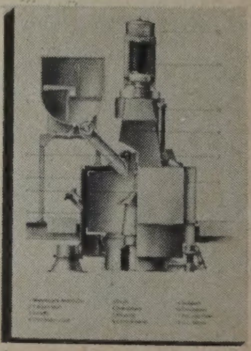

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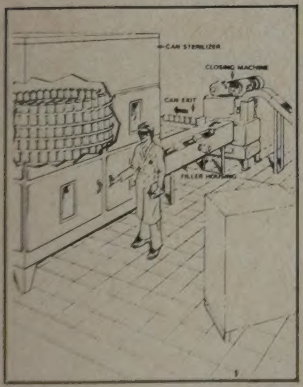

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COVER STORY: Stylized map of Mexico with photograph of assorted foods emphasizes that country's goal of more abundance in food and food varieties for the common people over the next 10 years. The riches of oil may make this a potent market indeed for food processing equipment/ systems' suppliers.

34° Tecnoconserve

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Chilton's

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2. **Cyclotherm system.**
3. **Twenty-five per cent.**
4. **Oil, gas, electricity.**

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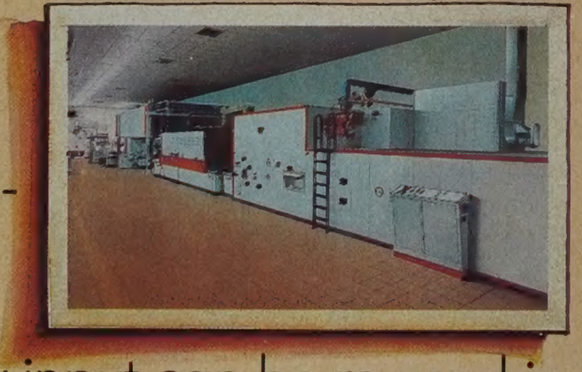

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Too much too soon?

Blessed with one precious resource — oil — Mexico covets a still more precious commodity — food. During the next ten years, though, the Mexican government will implement a daring plan to parlay its oil wealth into a broader food supply.

Only ten years ago Mexico had to import petroleum. Today, it is the world's fifth largest producer. Now, Mexico hopes to equal this reversal in its food supply.

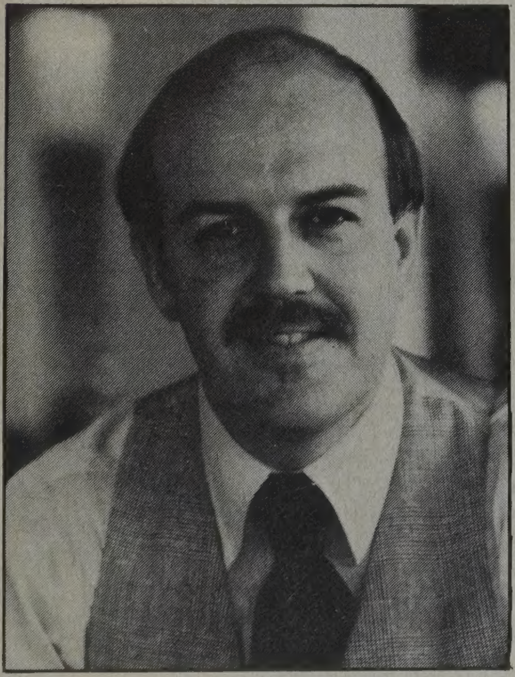
Mexico is aiming at doubling its output of processed foods over the next ten years. At least 25 percent of all its massive oil revenues will funnel into agriculture and agriculture related businesses such as food processing. This agri-food sector is being offered a range of incentives, especially tax credits, to encourage expansion.

It is important to note that Mexico has more or less left the provision of this increased food supply up to the private sector. The government does not want a larger role in the food business. The private sector has been given a unique opportunity to build a vital food industry in Mexico.

There is ample reason to want to move quickly in Mexico to produce more food. Many, if not most, of Mexico's 70 million people live on the fringes of the money economy. Aside from the teeming metropolitan area of Mexico City with its 16 million inhabitants, Mexico is a rural nation and poor rural at that. Many people live in any of an estimated 95,000 tiny villages so remote they are all but cut off from the 20th century. The aim of the Mexican government is to bring these people into the new circle of wealth created by oil. A wider range of foods, including processed foods, is part of the plan.

But like swift water, which harbors jagged perils under the surface, change can be too swift as well, creating little eddies of discontent and fear. Some of these problems are already arising in Mexico. If not handled delicately, some fear they could throttle Mexico's lofty food goals.

Waves of new products, many of them 'American-style' foods, arrive in the marketplace each month. An enormous amount of television advertising often accompanies the introduction. In June, 1980, for example, 35,200 commercials were aired for foods and luxury goods. The rapidity of change is, to some Mexicans, painfully evident in this advertising and they don't like it.



W. LeMaire

Some are assailing the food industry of Mexico for imposing 'junk' foods on them. They trot out statistics to prove these new products have little nutritional value and, thus, no relevant place in a nation where malnutrition is evident. Industry officials haul out reams of contradictory data. It's the usual futile tug-of-war.

It is futile because both groups are missing the point. Some food companies in Mexico may have leaped too vigorously into the march to adapt the foods and eating habits of other industrialized nations. And, too, some television advertising has been a little too hopeful about the merits of the product.

For many people these times of rapid change are no less than an attack on their national culture, their traditions. Mexicans of every class have long believed in the sanctity of a meal prepared from scratch in the kitchen. For a woman to serve her husband canned peas in some households would be to invite rebuke if not divorce. For some Mexicans their only acquaintance with a processed food or beverage is a can of beer or soft drink.

If this reaction to rapid change grows it could become a political force which could come down hard on the food companies of Mexico. It is a time to consider developing more foods with a more recognizable Mexican background as well as tempering some of the advertising claims.

Many other nations will be watching Mexico's progress in building a food industry almost overnight. Mexico's experience will serve as a case history one way or another. It may help if they realize that too much too soon can be as harmful as too little too late.

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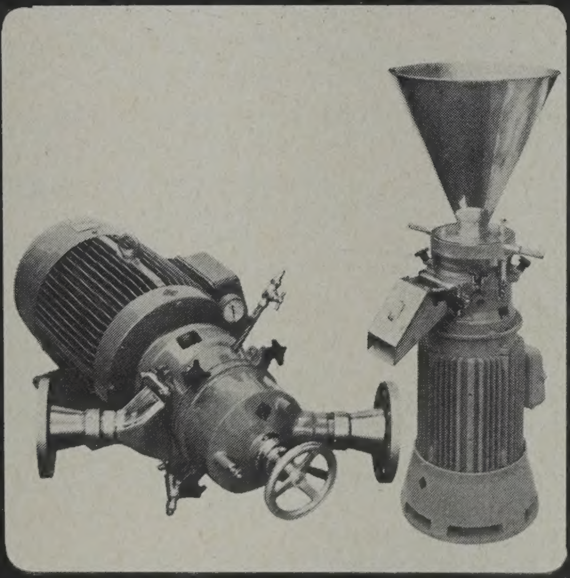

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Calendar/Kalendar/Calendrier/Calendario

JUNE

7-10 IFT, 41st Annual Meeting & Food Exposition, Georgia World Congress Center, Atlanta, Ga. USA. For more information contact: Calbert Willy, Institute of Food Technologists, Suite 2120-221 N. La Salle Street, Chicago, Illinois, USA 60601

20-30 China Food Technology Fair, Guangzhou Foreign Trade Center, Guangzhou (Canton), The People's Republic of China. For more information write to: Mike Rossell & Associates, 119 Merchant Street #408, Honolulu, Hawaii.

22-26 VINEXPO, 1st International Wine and Spirits Exhibition, 12 Place de la Bourse, 33076, Bordeaux, France.

JULY

13-17 Gums and Stabilisers for the Food Industry. An International Conference dealing with "Interactions of Hydrocolloids." For further information contact: Mr. P. A. Williams, the North E. Wales Institute, Kelsterton College, Connahs Quay, Deeside, Clywyd CH5 4BR, U.K.

AUGUST

11-13 International Symposium on Cereals. Carlsberg Research Center, Copenhagen, Denmark. For more information contact: Dr. Larz Munch, Carlsberg Research Center, Gamle Carlsberg Vej 10, DK-2500 Valby, Copenhagen, Denmark.

14-20 BUDATRANSPACK, International Exhibition of Packaging Machinery & Material Handling Equipment, Budapest, Hungary. For more information write to: The Hungarian Foreign Trade Office, Fair & Publicity Division, P.O. Box 44, XIV Varosliget, H 1441 Budapest, Hungary.

SEPTEMBER

15-17 FILTECH '81, International Filtration and Separation Exhibition, Olympia, London. For more details contact: Filtech Exhibition Ltd., 2 Woodstock Road, Croydon CR 9, 1LB, England.

21-23 Holland International Confectionary Fair. Utrecht, Holland. For more information write to: Royal Netherlands Industries Fair, Jaarbeursplein, Utrecht, Holland.

21-27 34 TECNOCONSERVE, International Exhibition of Plant & Equipment for Food Preserving Industries. Parma, Italy. For more information contact: E. A. Fiere di Parma, Parco Ducale, 43100 Parma, Italy.

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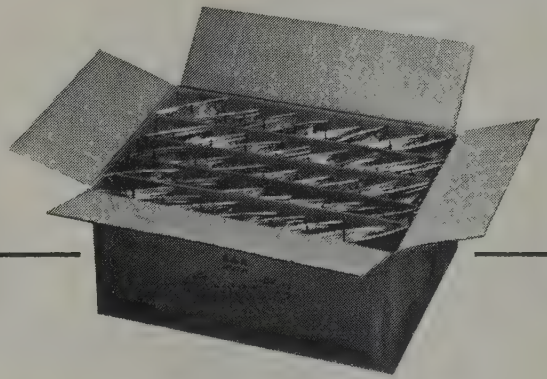

- **For sales,** there are several types of presentation, all of which can be put on pallets.
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World Report/Weltbericht/Bulletin Mondial/Informe Mundial

Japan gulps U.S. processed food; sales point to a billion-dollar trade soon

Japan is "well on its way" to becoming the first billion-dollar export market for U.S. consumer-ready and processed foods, according to U.S. Agricultural Attaché Dudley Williams. He said that both retail and food-service markets for processed food in Japan are growing.

"The bulk commodities—grain, soybeans, cotton and tobacco—will continue to be our 'bread and butter' items in Japan," he continued. "But our consumer-ready exports have more than doubled in the past five years."

Of such exports, "It's true they represented only 13% of our total agricultural exports to Japan last year—but that's 13% of $6.1 billion. So, we're talking about a market worth more than $800-million, and it's growing."

Mr. Williams said beef was the leading consumer-ready export last year, valued at $142 million. Next were citrus fruits worth $134 million. But, he said, exports of processed foods as a group are growing the fastest. They reached $266 million last year, or triple 1977's sales.

This processed-food range is a broad one, from canned zucchini to marshmallows, and from farm-raised salmon to papayas. The Japanese, in a word, adore Western food, even though high transportation costs may make it a luxury in Nippon.

Charges still abound in the Moscow caviar "caper"

It's almost one year since the Moscow caviar fiasco made news, but some officials of the USSR's Foreign Trade Ministry still fear a knock on the door. When all is said and done, the biggest crime of its kind since the Bolshevik Revolution may be apparent. More than 200 people have thus far been arrested.

The fraud perpetrated centered on the export of caviar in large cans marked "smoked, seasoned herring," discovered last year. Foreign retailers—co-conspirators—paid in hard-currency (for herring) and repackaged the contents in conventional sturgeon-roe cans. Then, they split the profits with their Soviet counterparts and hid that money in Swiss banks.

One top Soviet official was threatened with a death penalty for his role in the scheme. Former deputy fisheries minister Vladimir Rytov, who has since been reported as having died in prison, told investigators that the caviar-cum-herring was mainly shipped to Japan. No one knows where it travelled from there.

Apparently, the Soviet officials involved in the scheme were a relatively small band in a top-secret organization. That this is true is evidenced by the fact that the illicit trade went undetected for about 10 years.

FAS Survey of Average Retail Food Prices in Selected World Capitals,[1] March 3, 1981

[In U.S. dollars per kilogram,[2] or units as indicated, converted at current exchange rates]

Item	Bern	Bonn	Buenos Aires	Canberra	Copenhagen	London	Madrid	Mexico City	Ottawa	Paris	Rome	Stockholm	The Hague	Tokyo	Wash., D.C.
Steak, sirloin, boneless	16.24	9.92	7.12	8.07	11.83	13.91	7.44	4.78	7.11	9.72	11.57	15.79	10.82	37.11	9.46
Roast, chuck, boneless	8.63	7.18	6.67	5.27	6.17	6.57	5.07	4.36	4.60	9.68	9.64	10.62	5.91	29.95	7.47
Pork chops	8.12	5.96	6.67	6.00	6.10	5.64	3.86	4.53	4.80	4.98	5.79	8.63	5.45	9.40	5.71
Roast, pork, boneless	11.93	5.62	9.34	5.19	7.08	4.87	5.94	6.16	4.61	5.73	6.27	14.87	6.55	9.64	3.90
Bacon, sliced, pkgd.	5.33	7.98	11.57	7.52	7.77	7.50	7.91	4.42	4.62	18.84	5.79	9.93	9.68	9.13	3.13
Broilers, whole	2.89	2.16	4.18	3.31	3.45	2.23	1.65	2.57	2.54	3.45	2.70	4.83	1.94	3.91	1.30
Eggs, dozen	2.44	2.16	1.91	1.64	1.89	3.88	1.28	.90	1.04	1.90	1.52	2.51	1.32	1.77	2.18
Butter	7.74	4.32	8.23	2.72	3.85	3.52	7.30	5.55	3.30	5.28	4.98	4.49	3.80	6.06	5.05
Margarine	2.84	1.02	6.49	2.50	1.87	2.62	2.87	2.56	2.44	2.22	2.07	3.41	1.36	2.91	2.18
Cheese, Cheddar	7.46	5.49	12.01	2.88	6.50	4.96	7.55	11.90	5.57	7.35	5.01	7.04	8.46	5.69	3.86
Milk, whole, liter	.71	.43	1.56	.58	.56	NA	.47	.47	.68	.62	.61	.60	.47	.92	.73
Oil, cooking, liter	1.83	1.36	4.23	2.56	2.93	1.87	1.34	1.26	1.99	1.86	.91	5.38	1.10	2.12	1.66
Tomatoes	1.73	2.20	1.56	1.51	4.11	2.67	.86	.76	2.91	1.96	2.41	5.33	1.89	3.92	2.16
Onions, yellow	1.02	1.08	1.02	1.24	1.08	1.01	.43	1.78	.84	.77	.68	1.54	.32	1.10	.99
Potatoes	.50	.53	.58	.68	.52	.37	.25	.52	.27	.28	.34	.75	.17	1.18	.86
Apple	1.22	1.02	1.60	1.40	1.29	1.70	.83	1.77	1.26	.97	.77	1.96	.42	1.88	1.19
Oranges	1.22	.63	1.56	1.47	1.27	1.08	.77	.22	1.23	1.57	.96	1.56	.84	1.85	.51
Bread, white, pkgd.	1.73	.83	2.67	1.46	1.89	1.08	.90	.81	1.02	1.15	1.54	2.62	.64	1.64	1.52
Rice	.96	1.08	2.05	.93	1.62	1.37	1.19	.80	2.24	1.31	.96	1.79	.84	1.48	.97
Sugar	1.02	.86	1.47	.58	1.52	.84	.66	.57	.97	.79	.83	1.15	.79	1.31	2.09
Coffee	6.50	8.15	12.86	13.18	7.48	9.92	6.07	4.41	6.65	6.71	7.33	7.10	5.32	14.45	6.37

Prices in this table may not be directly comparable due to differences in quality, packing, and seasonal variation in supply.

[1] Data from Brasila and Brussels not available at press time.

[2] 1 kilogram = 2.2046 pound. 1 liter = 1.0567 quart

Huge, $2-million cold-storage unit is completed for U.K.'s top processor

Britain's biggest privately-owned meat processor, Brooks of Norwich, has cut the ribbon on a 16,800 m³ cold-store chamber, which was constructed by Smith & Partners Ltd., Reigate Surrey.

The new unit stores up to 5,000 tonnes of carcass and boxed meats in a five-high, fully-palletized system at −29°C. It is accessed via three automatic Smiths' insulated doors from a loading bank that can work eight 32-tonne refrigerated vehicles simultaneously.

The new chamber, before occupancy, stores 5,000 tonnes of meats.

All Smith-designed, completion of the new chamber has brought total Brooks' cold-storage and chill-storage to 21,274 m³ and 864 m³ respectively. Ancillary units and an office block have also been built at the site over the last two years.

For Mexico, 1982: Major "Alim-En-Tec" Food Show

Dozens of exhibitors have already bought booth space for the "Alim-En-Tec '82" exposition, the first international exposition of food processing and packaging equipment to be held in Mexico City. Dates: 26-30 April, 1982.

As the show directors are saying: "The early, positive response to the show—a year prior to the scheduled dates—emphasizes that Mexico has become a dynamic market for food processing and packaging equipment, related to the Mexican government's National Plan for Industrial Development. Forecasts from both government and industry sources indicate that the Mexican market for imported food processing and packaging equipment will rise to $100 million in 1983."

WAUKESHA is the preferred food processing pump because its Universal Series sanitary pumps are designed to accommodate a wide variety of interchangeable seals and seal assemblies to suit application requirements. When pump versatility is important . . . this is an important feature!

Coupled with greater flow capacity . . . higher pressure capabilities . . . and longer service life, Waukesha is the logical specification in your next sanitary pump application.

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WFP-202

Circle 11 on Inquiry Card

WHY YOU SHOULD HAVE A FLOWPAK®

Anyone who is proud of his company and its quality production wants the best tools for the job.

The news has gone quickly round the food industry that the new Rose Forgrove RF 255 FLOWPAK® is the most advanced in its field – particularly in biscuit, confectionery and pharmaceutical plants.

Operators appreciate the clear and convenient controls, ease of wrapper threading, adjustments while the machine is quietly running, hot knife adjustment and quick access for cleaning.

Company advantages are just as significant:- greater efficiency and reduced down time with an improved sealing system for a wide range of materials, pretuned folding boxes, better plant layout with right and left hand models and many optional attachments.

The design meets current safety requirements, and there is less product damage.

Continuity of efficient production means less loss and more profit – and money that will pay for the new investment.

If you want to give your production workers the best tools for the job, please telephone Rose Forgrove – designers and manufacturers of genuine FLOWPAK® machines.

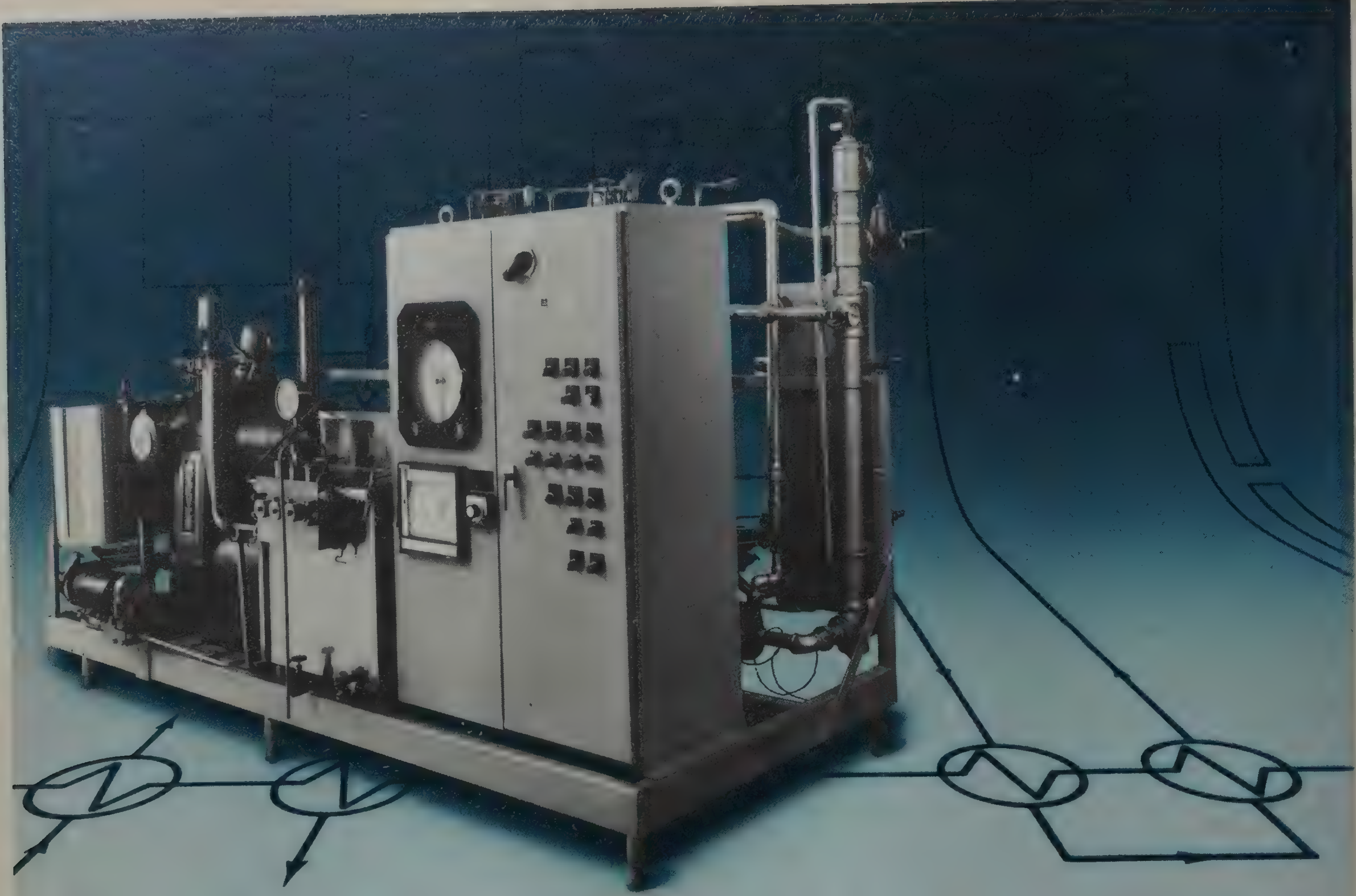
Rose Forgrove

Rose Forgrove Limited
Seacroft Leeds England LS14 2AN
Telephone: (0532) 648177 Telex: 557441

FLOWPAK® is a registered trade mark.

1979

GP 273



Unitherm® aseptic processing saves you money.

You can minimize expenditures for the installation, training of operators and maintenance with Cherry-Burrell's compact, self-contained Unitherm® aseptic processing system which functions in place of multiple separate components. Substantial saving in the cost of utilities will also result with models designed for regeneration.

In addition, maintaining product aseptic integrity throughout is easy, because Unitherm® is positively sealed from input to output. Furthermore, an exclusive valve stem feature and gauge position, in the remote homogenizing valves prevents contamination of product zones and eliminates the costly aseptic homogenizer. A central control panel further minimizes the chance of error.

Is Unitherm the best for your operation?

Unitherm systems are perfect for processing non-acidic products such as milk, creams, toppings, culture media, infant formulas and pharmaceuticals. Since the Unitherms offer more gentle heat treatment than is featured in flash-cooling processes — many stabilizers and emulsifiers may be reduced or eliminated.

Three models are available to meet your production requirements: Unitherm IV (85-170 liter), Unitherm XXI (300-795 liter) and Unitherm XLV (600-1700 liter).

For details on any Unitherm model write Cherry-Burrell.

Cherry-Burrell
2400 Sixth Street SW
Cedar Rapids, IA 52406 USA
Telephone 319/399-3200
CBL: Cherryburl TLX: 46-4426
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CHERRY-BURRELL

Circle 13 on Inquiry Card

Averigüe si el sistema de elaboración aseptica Unitherm® de Cherry-Burrell puede economizarle dinero.

El sistema compacto Unitherm® de Cherry-Burrell funciona en lugar de varios componentes separados para elaborar en forma económica productos no ácidos tales como: leche, cremas, sustancias para decoración, medios de cultivo, fórmulas infantiles y productos farmacéuticos.

Para detalles haga un círculo en el número 41 de la tarjeta de solicitudes del lector.

Circle 41 on Inquiry Card

Sind Sie daran interessiert zu erfahren, wie Cherry-Burrells aseptisches Verarbeitungssystem Unitherm® Ihnen Geld sparen kann?

Cherry-Burrells Unitherm®-System dient an Stelle eines Systems aus vielen einzelnen Elementen zur wirtschaftlichen Verarbeitung säurefreier Produkte wie Milch, Sahne, Aufstriche, Kulturmedien, Baby Nahrung und Pharmazeutika.

Kreisen Sie bitte die Nr. 42 auf der Leser-Informationskarte ein, wenn Sie weitere Einzelheiten erfahren möchten.

Circle 42 on Inquiry Card

Découvrez comment le système de traitement aseptique Unitherm® de Cherry-Burrell peut vous faire faire des économies

Pour traiter économiquement les produits non acides tels que le lait, les crèmes, les enrobages et garnitures, les cultures, les aliments infantiles préparés et les produits pharmaceutiques, le système Unitherm® compact de Cherry-Burrell remplace de nombreux appareils séparés.

Pour plus de détails, encerclez le numéro 43 de la carte réponse.

Circle 43 on Inquiry Card

Now, an artificial "cork" for wine bottles saves $$

No longer will the better grades among the Free World's annual production of 22 billion bottles of wine have to be corked in the traditional way. The bark of the cork oak tree, a tradition for stopping wine bottles since the 18th century, can be replaced now with a man-made product known as "EVA."

EVA—ethyl vinyl acetate—a decorative heel material for women's shoes until now, looks and behaves like cork; it can be shaped to fit the bottles of any vintner. It also is said to be much cheaper than the real thing and, in several ways, performs better.

It won't for example, crumble under the punishment of a nervous corkscrew wielder. Also, it won't dry out, as will cork, when a bottle is allowed to stand upright.

The new use for EVA was developed in the U.K. by Metal Box Ltd. during shortages of high-grade cork. The company almost became discouraged when its research showed an astonishing variety of bottleneck sizes among the world's wine producers. But all such problems have now been resolved and the product is ready.

Now, market experts await the competitive reaction from Portugal, which supplies some 200,000 metric tons of cork a year—more than half the world's demand.

Big "Kekou Kele" plant opened in Beijing, China

A Chinese worker culls away rejected bottles in the production line of the new Coca-Cola plant in suburban Beijing (Peking), China. With parts of the equipment donated by Coca-Cola, the plant can produce 300 bottles/minute or 2,000,000 cases/year—enough to attract one billion potential drinkers.

Coca-Cola is known as "Kekou Kele" in China. But, a new expression will have to be coined to call for the ubiquitous "Coke" ordered by the millions daily around the world.

New "Coke" line can produce 300 bottles/minute.

34th Tecnoconserve Fair set for Parma, Italy

Few cities in Italy can play host to the food trade better than Parma. Located in the heart of one of the country's richest agricultural sectors, the city features a centuries-old tradition of food, wine and history.

Parma is also headquarters for a number of international food processing and food machinery companies. Thus, from 21-27 September, Parma's Fiere di Parma will host an increasingly important food exhibit, the 34th Tecnoconserve—a major international exhibition of plant equipment for the food industry. The exhibit places heavy emphasis on process and packaging equipment for a broad range of fruits and vegetables, fish and meats, plus other agricultural products.

For more information on this exhibit, either as a visitor or an exhibitor, write to: Mr. Pagani, E.A. Fiere di Parma, Parco Ducale, 43100 Parma, Italy. Telex: 530259 CCIA PR-L (per Ente Fiere).

Big ANUGA Fair set for Cologne in mid-October

Preparations for the world food-market fair "ANUGA"—in Cologne, October 10-15—are in full swing. The triple fair—"Consuma, Gastroma, Technica"—is the biggest of its kind, with visitors from all continents.

A biennial event, this year's fair will exceed 1979's in all statistics, according to ANUGA spokesmen. The 1979 figures were: Exhibit area of 200,000 m² (this year's will be 210,000 m²); 2,866 direct exhibitors and another 1,274 represented firms; foreign firms amounted to 62% of all exhibitors; 135,700 trade visitors from 87 nations—with six nations (Afghanistan, Barbados, China, Dominican Republic, Finland and Zambia) attending for the first time.

The three main events are "Consuma"—the foods, provisions and non-foods; "Gastroma"—equipment and systems for hotels, restaurants and the fast-food industry; and "Technica"—equipment for the grocery trade. According to show directors: "Many new products or technologies will be featured."

Business Briefs

Desarrollo Industrial-Ingenieros SA, Casma, Mexico has been named official representative for **Simon-Rosedowns Ltd.,** U.K. The Mexican firm specializes in vegetable-oilseed processing.

(Continued on page 19)

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for vegetable products such as

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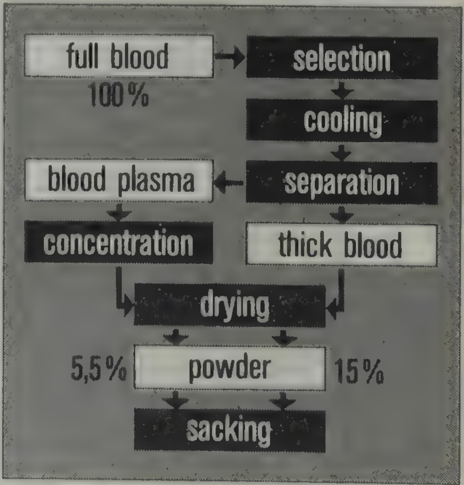
vegetable
(e.g. tomatoes)
fodder plants



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Circle 14 on Inquiry Card

Circle 82 on Inquiry Card→

Bensdorp

COCOA/CHOCOLATE

Quality and expertise: those are the foundations on which Bensdorp builds its worldwide reputation. Its production process is designed to guarantee the superior quality of Dutch cocoa powder. An important feature of the process is the traditional ''Dutching'' step.

Excellently equipped laboratories, where customers' product runs are simulated on a small scale, highly skilled technical advisors, and the accumulated know-how of some 150 years of cocoa handling are the factors by which Bensdorp lives up to its promises . .

"Holland" Quality & Expertise

Product range

Standard cocoa powders

- non-alkalised cocoa powders (NP)
- alkalised cocoa powders (DP)

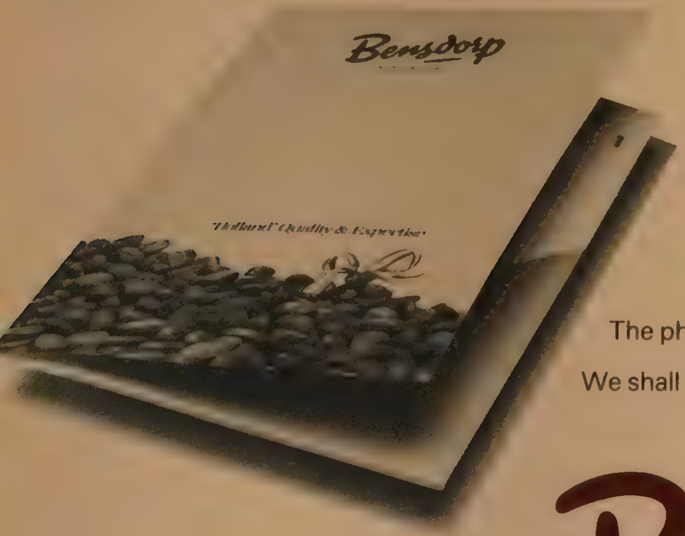
Special-purpose cocoa powders

- stabilised cocoa powders
- lecithinated cocoa powders
- alkalised dark-brown cocoa powders (SP)
- slightly-alkalised reddish-brown cocoa powders (DSR)
- alkalised medium-red cocoa powders (MR)
- alkalised red cocoa powders (SR)

Cocoa butter

Further cocoa and chocolate products

- cocoa-flavoured vending-machine mixes
- cocoa powder/sugar mixtures
- unsweetened chocolate liquor (cocoa mass)
- cocoa granules
- chocolate couverture
- compound coating



The photograph shows portfolio with product quality specification sheets.

We shall be pleased to send you this portfolio on application.

Bensdorp

For further information, including prices, formulations, terms of delivery and payment, packaging etc., our sales and technical service staff will be pleased to help you.

Bensdorp sales offices:

BUSSUM: Bensdorp B.V., Postbus 4, 1400 AA Bussum, Holland, Tel. (2159) 16541, Telex 43114.
SAN MATEO: Blooker's Royal, Inc., P.O. Box 1026, San Mateo-Calif. 94403, USA, Tel. (415) 591-8976/7, Telex 33-1421.
FRAMINGHAM: W.L.M. Bensdorp Comp., P.O. Box 3216 Sax., Framingham-Mass. 01701, USA, Tel. (617) 877-6210/1, Telex 94-8472.
LYON: Cacao Bensdorp-Blooker (France) S.A., 24 Rue Genton, F 69008 Lyon, France.
KLEVE: Bensdorp Industrieverkauf GmbH, Postfach 2144, Van-den-Bergh-Strasse 2-14, D 419 Kleve, West Germany.
WIEN: Bensdorp GmbH, Postfach 17, Weinberggasse 57-77, A 1191 Wien, Austria.

In all other countries we are represented by agents.

Business Briefs

China has been documented by the U.S. government as the **top food importer** among all the world's low-income countries. For example, China imported almost $2 billion worth of U.S. food last year, and it is far and away the largest potential LDC buyer well into the future. Key among her imports are feedgrains to support her poultry and swine production.

A highly-automated crispbread bakery, with a yearly capacity of 24,000 tons, has been brought onstream by **Wasabrod AB,** major Swedish crispbread producer, at Stockholm. The plant cost $46 million; it is fully automated, with computerized process controls monitoring 100 tons of rye flour, 2.4 tons of yeast and 670 kg of salt daily. About half of more than $100-million annual production is exported.

Sages SpA, a division of **Unilever** in Rome, has ordered a huge **SI Handling Systems'** Ordermatic Order Selection System (U.S.A.). The two-module, 26-bay machine is computer controlled to select individual cartons and packs of frozen food and ice cream at a rate of 20,000 cases per shift.

A German-Italian joint venture of **Braunschweigische Maschinenbauanstalt AG** (BMA) and **Snamprogetti** will build a large beet-sugar factory at Ben Bechir, Tunisia. The plant will process 4,000 tons/day of beets, plus a yeast factory for 7.5 tons of baker's yeast/day. Commissioning is set for 1982. The share of supplies and services to be furnished by BMA will amount to about one-third of the project's full value of DM 160 million.

World 1980/1981 production of **oilseeds** is now forecast at 162.3 million metric tons, or 1 million tons higher than last February's forecast. Upward revisions in both the **Brazilian** and **Argentine** crops—because of favorable weather conditions—account for about half the gain. Brazil's soybean production is pegged at 15.8 million tons; Argentina's at 4.2 million tons.

←Circle 82 on Inquiry Card

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The Most Efficient-Most Productive
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Spot, Face and Wrap Around Labeling on GLASS • METAL • PLASTIC • FIBER • Round Containers 1½ oz. to 5-Gal.

Over 10,000 Labelettes are in operation successfully handling short production runs, custom runs and testing programs.

Model 18 SKIP-GLUE LABELER for Straight-Sided Containers 1½-oz. to 1-gal.
Ideal for wrap around skip-glue patterns, saving up to 85% on glue cost. Two stage automatic label feed and 3-speed adjustment. Also, does spot and face with full-glue operations.

Send us samples of your labels and containers and we'll help you select the right machine for your application.

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NATIONAL® FOOD DRYERS...

FOR DEHYDRATING . . .
Onions • Garlic • Carrots • Peppers • Potatoes • Celery and Other Vegetables • Cereals • Snacks • Animal Feeds and Foods • Crumbs • Seeds • Extruded Foods • Protein and Other Similar Products

MULTI-STAGE DEHYDRATION RANGE

A NATIONAL **Food Drying Range** (illustrated above) is a series of **Single Stage Conveyor Dryers** which moves the product automatically through each stage. Each stage is designed for zoning, which presents a new set of conditions to the product being processed. In addition, at the transfer point between stages, the product is redistributed for greater processing uniformity.

FIELD-PROVEN TO HELP YOU MANUFACTURE SUPERIOR PRODUCTS AT THE LEAST COST PER UNIT

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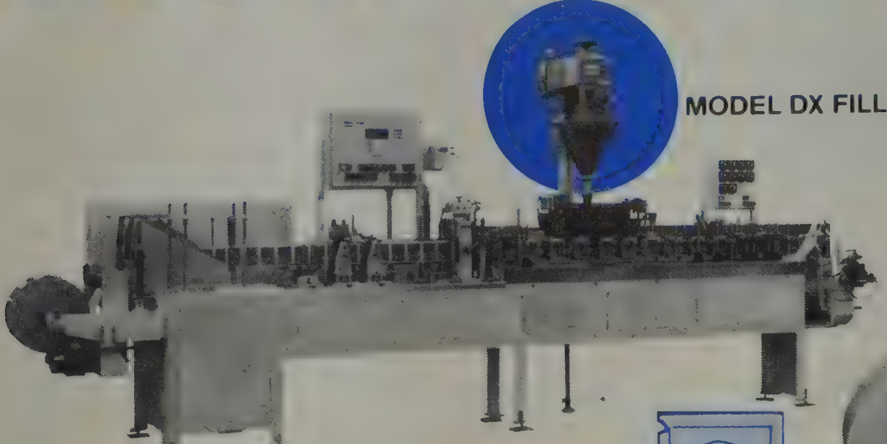
Circle 16 on Inquiry Card

Bartelt®...

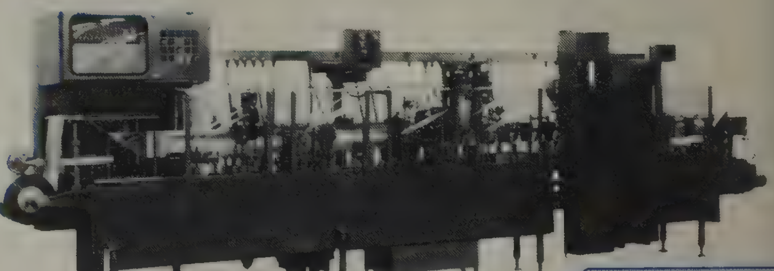
packaging machinery's first family.



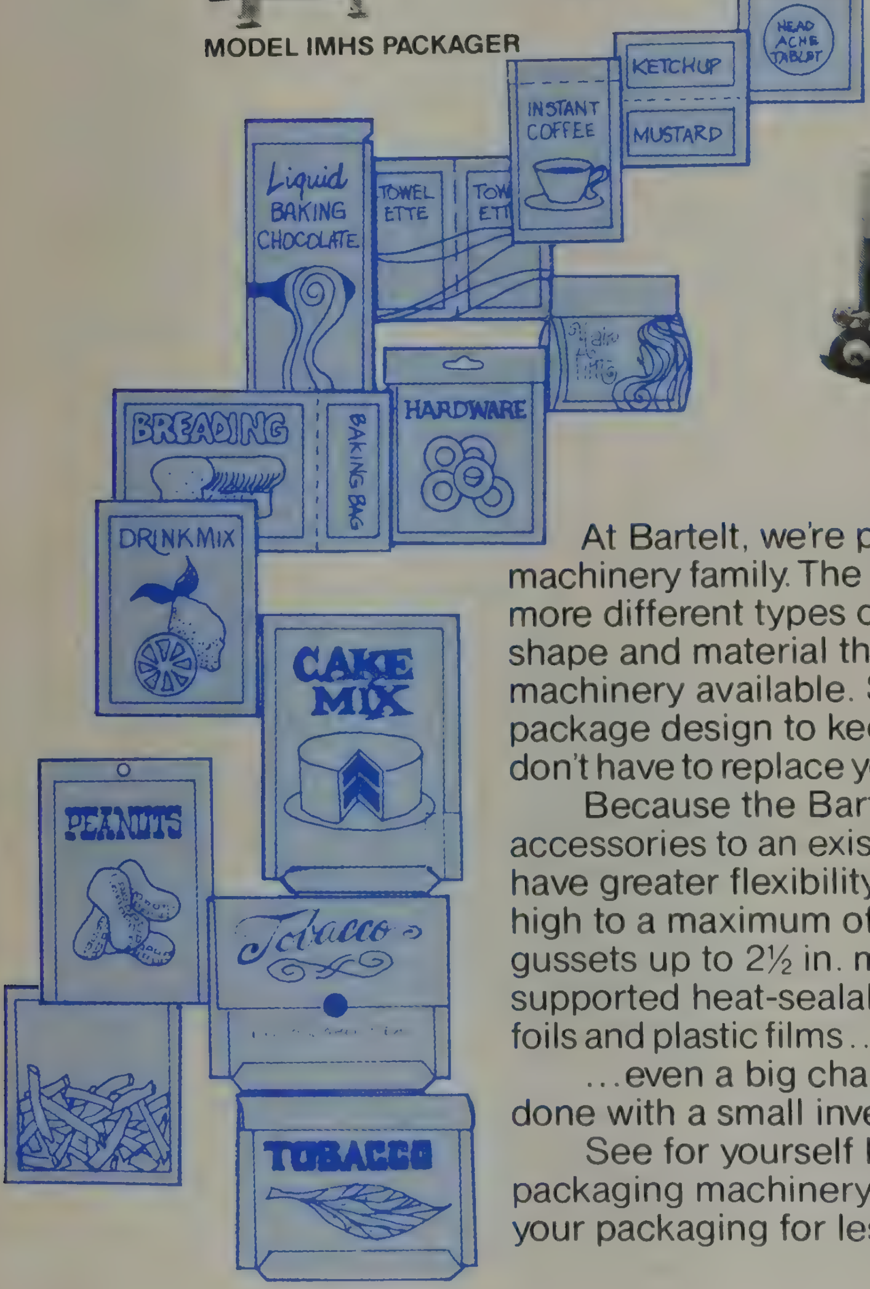
MODEL DX FILLER

MODEL IMHS PACKAGER

MODEL IM-CARTONER



MODEL IMR-RETORT PACKAGER



At Bartelt, we're proud of our packaging machinery family. The Bartelt packager can produce more different types of flexible pouches in size, shape and material than any other packaging machinery available. So when you change your package design to keep pace with the market, you don't have to replace your entire packaging system.

Because the Bartelt family concept lets you add low-cost accessories to an existing, standard Bartelt IM Packager, you can have greater flexibility in... *package size* from 2 in. wide x 2 in. high to a maximum of 7¾ in. wide x 10½ in. high with bottom gussets up to 2½ in. maximum... *package material* of most self-supported heat-sealable laminates including paper, aluminum foils and plastic films... *speeds* up to 200 per minute... and more...

...even a big change in the product you package can be done with a small investment on a Bartelt packager.

See for yourself how the first family of proven Bartelt packaging machinery can help you make the big changes in your packaging for less investment.

Bartelt Rexham

Rexham Corporation Bartelt Machinery Division
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813/355-7141

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Circle 17 on Inquiry Card

The Supermarket/El Supermercado/Der Supermarkt/Le Supermarché

Tiny Bacon Bits—The Real Thing

Real bacon — not just a bacon flavor — can be added to a variety of food products such as cheese spreads, frozen waffles, salad dressings, quiches — even potato chips. The result is a "gourmet" product with a distinct marketing appeal. The bacon bits, as well as sausage bits, ham bits and turkey bits are produced by Oscar Mayer and sold by OM Ingredients Inc. OM's manufacturing process involves two basic processes-grinding and cooking, and each phase is quite critical to produce the bits. "The real key is cooking," says Roy Hoxie, Industrial Sales Manager. "We have a special process that gives us the desired end product."

Grinding is also critical in that certain applications require precise particle size. For example, if the bacon is going to be put into a cheese spread, and if the cheese spread is packaged in an aerosol can, all of the particles of bacon must be able to pass through the aerosol nozzle. In that case, of course, the bacon is finely ground. Another application requiring finely-ground bacon is its use as a seasoning on potato chips. In this case, the bacon could be combined with other ingredients such as sour-cream seasoning. The combination of bacon and sour cream is then applied to potato chips after they are fried.

Some completely new products using meat bits have also been seen in test markets. Land O' Lakes, for example has been testing an "instant pizza mix" packaged in a cup similar to that used for cottage cheese. The mix is coarse ground cheese and meat but it has a consistency that can easily spread onto an English muffin. Heating the muffin and mix in an oven produces a pizza-type product. Oscar Mayer & Company, 910 Mayer Ave., Madison, WI, 53704.

D Wirklicher Schinken — nicht nur Schinkengeschmack — kann zu einer Vielzahl von Lebensmittelprodukten hinzugefügt werden, wie z.B. Käseaufstrichen, gefrorenen Waffeln, Salatsoßen, Käsekuchen — sogar gerösteten Kartoffel-scheiben. Das Ergebnis ist ein "Feinschmecker" produkt mit einem deutlichen Vermarktungsanreiz. Die Schinkenstückchen werden von Oscar Mayer hergestellt und von OM Ingredients Inc. verkauft. Der Herstellungsprozeß von OM schließt zwei grundlegende Verfahren ein — Mahlen und Kochen, und jede Phase ist recht kritisch bei der Herstellung der Stückchen. "Der Schlüssel ist wirklich das Kochen", sagt Roy Hoxie, Leiter für industriellen Verkauf. "Wir haben einen besonderes Verfahren, das uns gewünschte Endprodukt gibt."

F On peut ajouter du lard, et non pas seulement un arômatiseur, à une variété de produits alimentaires tels les crèmes de fromage, les gaufres congelées, les sauces à salade, les quiches et même les chips. Le résultat est un produit d'un attrait indéniable. Les morceaux de lard — ainsi que les morceaux de saucisse, de jambon et de dinde — sont produits par Oscar Meyer et vendus par OM Ingredients, INC. Le procédé de fabrication d'OM comporte deux processus fondamentaux — broyage et cuisson — d'une importance critique dans la production des morceaux de viande. "Le plus important, c'est la cuisson," déclare Roy Hoxie, Directeur des ventes industrielles. "Nous avons un procédé spécial qui nous permet d'obtenir le produit final désiré."

E Se puede añadir auténtico bacon — no sólo sabor a bacon — a varios productos alimenticios tales como pastas de queso para extender, waffles congelados, aderezos para ensaladas, quiches, incluso patatas fritas. El resultado es un producto para "gourmets" con un claro atractivo para el mercado.

Oscar Mayer produce estas partículas de bacon — así como de salchicha, jamón, y pavo, y las vende OM Ingredients, Inc. El proceso de fabricación de OM implica dos procesos básicos — molienda y cocinado, y cada fase es crítica para la producción de las partículas. "La clave real está en cocinarlas", dice Roy Hoxie, Director de ventas industriales, "Tenemos un proceso especial que nos da el producto final deseado".

FREEZE

© 1981 Rich Products Corporation

Rich's conquers the last frontier in food technology.

Rich Products has been a major innovator in the frozen food industry for more than 35 years. A progressive, future-oriented company, we were founded on one very good idea: A non-dairy topping that only had to be thawed and whipped. Since then, our success has multiplied along with our ideas. Now Rich's is known throughout the United States and Canada for a wide variety of excellent bakery and non-dairy products for both the retail and catering markets.

As leaders in product development and quality, in marketing and merchandising, we've been honored with the National Frozen Food Industry's First Annual Grand Award.

It's our pioneering spirit and sincere commitment to customer convenience which led to our newest achievement: Freeze Flo.™

Freeze Flo.™ Foods that freeze but don't harden.

Freeze Flo is the phenomenal, completely natural process that revolutionizes the very concept of food preservation. It prevents the formation of ice crystals in foods held at sub-freezing temperatures, so Freeze Flo foods never need thawing. It also reduces energy costs in processing to a minimum. Frozen desserts, frozen beverage concentrates, frozen fruits and more are not only usable at 0°F (-18°C), they also save the high cost of energy normally used to freeze such products solid.

Most extraordinary of all, Freeze Flo contributes to food safety. It extends shelf life, preventing spoilage and waste. Foods stay fresher longer under refrigeration, and even at ambient temperatures.

For further details,
write Rich's now.
Freeze Flo Division,
Rich Products Corporation
P.O. Box 245,
1150 Niagara Street
Buffalo, New York 14213
U.S.A.

And join us
on the newest frontier.

Rich's

Circle 18 on Inquiry Card

Now, "Spooky" Spaghetti

This new product is labeled "spooky" spaghetti in tomato sauce. It's designed to appeal to children who, for one example, represent the fastest growing segment of Canada's total canned-spaghetti market. Product comes in 226 g, 396 g and 538 g cans (with tomato sauce) and 436 g can with sauce and beef. (M. J. Heinz Co., P.O. Box 57, Pittsburgh, Pennsylvania U.S.A. 15230.)

D Dies neue Produkt wird als "Geister" Spaghetti in Tomatensoße bezeichnet. Es wurde geplant, um Kinder anzusprechen, die zum Beispiel die am schnellsten wachsende Gruppe von Kanadas gesamtem Dosen-Spaghettimarkt darstellen. Das Produkt gibt es in Dosen von 226 g, 396 g und 538 g (mit Tomatensoße) und 436 g Dose mit Soße und Rindfleisch.

F Ce nouveau produit, baptisé "spooky", est un plat de spaghetti dans une sauce tomate. Il est conçu pour les enfants, qui représentent le segment du marché des spaghetti en boîte canadien dont l'accroissement est le plus rapide. Le produit est commercialisé en boîtes de 226 g, 396 g et 538 g (à la sauce tomate) et en boîtes de 436 à la sauce tomate et au boeuf.

E Este nuevo está marcado como fideos "fantasmales" en salsa de tomate. Está proyectado para resultar atractivo a los niños que, por un ejemplo, representan el segmento del mercado total de fideos enlatados de Canadá de más rápido crecimiento. El producto viene en latas de 226 g, 396 g, y 538 g (con salsa de tomate) y en latas de 436 g con salsa y carne de vaca.

Good for Children

A new cream-spread for sandwiches incorporates sliced nuts; it's also a nutritious treat for children. The product comes in a small jar, and it is designed for easy access by children. The product neither flows nor sticks. (Zaini Co., CP 10 334, Milano, Italy.)

D Ein neuer cremiger Aufstrich für Brotscheiben enthält geschnittene Nüsse; es ist auch ein nahrhafter Leckerbissen für Kinder. Das Produkt gibt es in einer kleinen Dose und ist so entworfen, daß Kinder leichten Zugang dazu haben. Das Produkt fließt und klebt nicht.

F Une crème à sandwich avec des noix émincées, un régal nourrissant pour les enfants. Le produit est emballé dans un petit récipient, et il est conçu pour être facilement accessible aux enfants. Le produit ne coule pas et ne colle pas.

E Una nueva pasta de crema para extender incorpora nuecas cortadas; es también una nutritiva golosina para niños. El producto viene en un pequeño tarro, y está proyectado para fácil acceso por los niños. El producto no es fluido ni pegajoso.

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JOHN H. SPARRA
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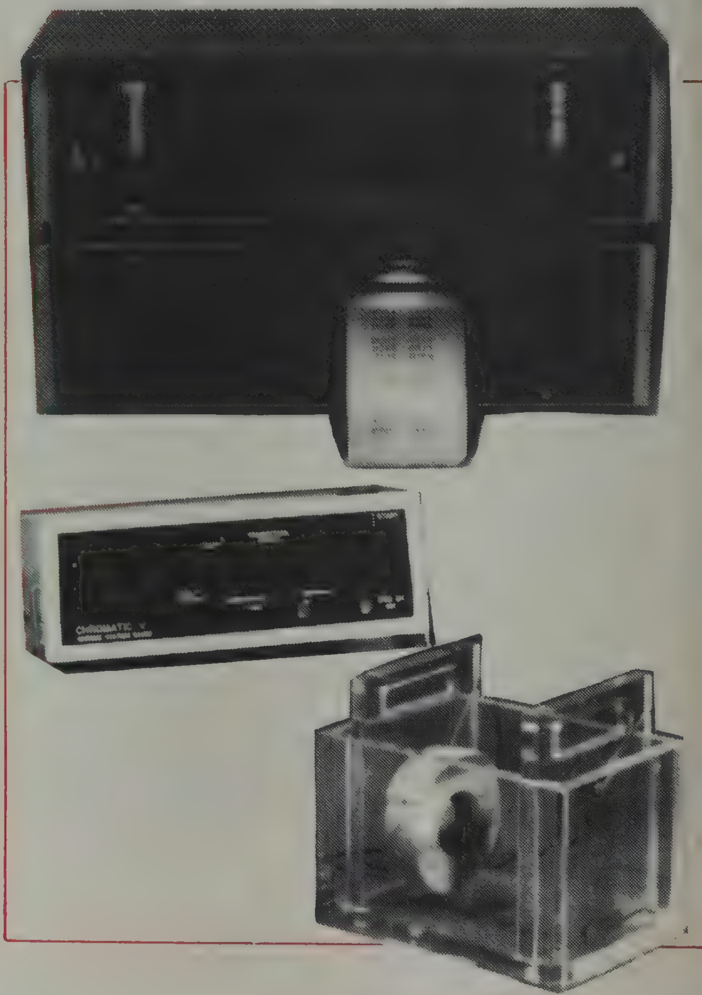

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Circle 21 on Inquiry Card

Instrumentos para Medir el Espesor del Estaño y Cromo

Embotelladores, conserveros, fabricantes de latas y las fábricas de estaño advierten la importancia del control de calidad en sus operaciones, en particular la necesidad de medir el revestimiento por el que están pagando. Dos instrumentos de control de calidad fabricados por Products Distribution Services pueden ayudarles a realizar esa tarea del modo más preciso y eficiente.

La unidad Chromatic mide el espesor del cromo metálico sobre sellos libres de estaño con unos límites de precisión de ± 1%, y con unos límites de precisión igualmente elevados para la uniformidad.

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Ambas unidades ofrecen todas las características que necesita usted para controlar y asegurar la calidad de sus productos y adquisiciones. El estaño, aleaciones de estaño, cromo, óxidos de estaño y cromo, y revestimientos de zinc, pueden ser medidos con facilidad, incluso por operadores inexpertos.

Fábricas de estaño de todo el mundo han adoptado estas unidades.

Circle 22 on Inquiry Card

Pouched Potato Dish: “Rosti”

This prepared potato dish from Flodor is based on the Swiss specialty. Rosti, made with grated potatoes, bacon, cheese and other flavorings and spices. Of special interest is the package which is a retortable pouch capable of preserving the product up to six months without refrigeration. (Flodor, 202 Bureaux de la Colline, 92213 Saint-Cloud, France.)

D Diese vorbereitete Kartoffelspeise von Flodor beruht auf der schweizerischen Spezialität, Rösti, die mit geschnitzelten Kartoffeln, Schinken, Käse und anderen Geschmackstoffen und Gewürzen hergestellt werden. Von besonderem Interesse ist ein Retortenbeutel, der das Produkt bis zu sechs Monaten ohne Kühlung konservieren kann. (Flodor, 202 Bureaux de la Colline, 92213 Saint-Cloud, Frankreich).

F Ce plat de pomme de terre de Flodor est basé sur le Rosti, spécialité suisse, fait avec des pommes de terre râpées, du lard, du fromage et d'autres arômes et épices. On remarquera tout particulièrement l'emballage, il s'agit, en effet, d'un sachet pouvant être stérilisé à l'autoclave et capable de conserver le produit jusqu'à six mois sans réfrigération. (Flodor, 202 Bureaux de la Colline, 92213 Saint-Cloud, France.)

E Esto plato de patatas preparado por Flodo está basado en la especialidad suiza Rosti, hecha con patatas ralladas, bacon, queso, y otros condimentos y especias. De especial interés es el empaquetado, una bolsa que se puede retorcer, capaz de conservar el producto hasta seís meses sin refrigeración. (Flodor, 202 Bureaux de la Colline, 92213 Saint Cloud, France)

“Firn” Mint/Chocolate Candy

A new brand-name, “Firn,” a hard candy with mint flavor and chocolate core, is being marketed from Germany. This confectioner has combined the fresh “bite” of acid with the sweetness of sugar for a refreshing taste. (August Storck, D 4802 Halle/Westfalia, West Germany.)

D Ein neuer Markennamme, “Firn”, ein harter Bonbon mit Pfefferminzgeschmack und Schokoladen “kern”, wird von Deutschland vermartktet. Der Konditor hat den frischen “Biß” von Sauer mit der Süße von Zucker zu einem erfrischenden Geschmack kombiniert. (August Stork, D 4802 Halle/Westfalen, Westdeutschland).

F “Firn”, une nouvelle confiserie mentholée fourrée au chocolat est désormais commercialisée d'Allemagne. Le confiseur a combiné la fraîcheur de l'acidulé et la douceur du sucre pour obtenir un goût rafraîchissant. (August Storck, D 4802 Halle/Westfalia, Allemagne

E Un nuevo nombre comercial, “Firn”, un dulce duro con sabor a menta y núcleo de chocolate, se está comercializando desde Alemania. Esta confitería ha combinado el fresco “mordisco”' del ácido con la dulzura del azucar para conseguir un refrescante sabor.

This Cheese is to Squeeze

Cheese in a tube—that's the idea behind this new convenience product from Eru of The Netherlands. Packed in 100g aluminum tubes, the processed cheese is considered ideal for preparing sandwiches, canapes, etc. There are two versions of the product, natural and peppered (3%). (Eru, Woerden, Nederland).

D Käse in der Tube—das ist die Idee hinter diesem neuem Fertigprodukt von Eru aus den Niederlanden. Verpackt in Aluminiumtuben von 100g, wird der Schmelzkäse als ideal für die Zubereitung von Butterbroten, Canapes usw. betrachtet. Es gibt zwei Formen dieses Produktes, und zwar den natürlichen und den mit Pfeffer (3%).

F Du fromage en tube—c'est le nouveau produit présenté par Eru des Pays-Bas. Emballé dans des tubes en aluminium de 100 g., ce fromage fondu est considéré comme idéal pour la préparation de sandwichs, canapés, etc. Il y a deux variantes de produit: naturel et poivré (3%).

E Queso en un tubo—esta es la idea tras el nuevo y conveniente producto de Eru, la empresa holandesa. Este queso elaborado, envasado en tubos de aluminio de 100g se considera ideal para la preparación de bocadillos, canapés, etc. Existen dos versiones del producto, natural y con pimienta (3%).

Syrups & White Alcohol

The German distillery Anton Riemerschmid has introduced two new products, including a white alcohol distilled from the fermentation of tropical fruits such as xuxu, made of banana (40%), and Sudseeamazone, made from the juice of passion fruit (45%).

Also the company is marketing four syrups for use in the preparation of drinks and also as an ingredient for desserts.

The mango, banana and maracuja (passion fruit) syrups contain between 38-40% fruit. A grenandine syrup (pomegranate) is artificially colored but contains natural extracts of the plant. (Anton Riemerschmid, Pratersinsol 3, 8000 München 22, West Germany).

D Die deutsche Brennerei Anton Riemerschmid machte zwei neue Produkte bekannt: ein klares Alkoholdestillat, gewonnen aus dem Gärungsprodukt tropischer Früchte wie z.B. Xuxu, hergestellt aus Bananen (40%), und Südseeamazone, hergestellt aus dem Saft der Passionsfrucht (45%).

Die Firma vertreibt außerdem vier verschiedene Sirups für Herstellung von Getränken und als ein Bestandteil von Desserts.

F La distillerie allemande Anton Riemerschmid a présenté deux nouveaux alcools blancs, distillés à partir de la fermentation de fruits tropicaux: l'un est le "Xuxu" à base de bananes et qui titre 40 degrés, et l'autre est le "Sudseeamazone" à base de fruits de la Passion et qui titre 45 degrés.

La compagnie a également élaboré quatre sirops servant à la confection de boissons et à la préparation d'entremets.

E La destilería Alemana Anton Riemerschmid, ha introducido un alcohol blanco destilado de la fermentación de frutas tropicales como xuxu, hecho de guineo (40%) y sudseeamazone, hecho del jugo de la fruta de maracuja (45%).

Esta compãnía elabora cuatro siropes para usarse en la preparación de tragos y tambíen como ingrediente para postres.

ANGELUS

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Angelus produit une gamme complète de machines de couture de boîtes métalliques convenant à une grande variété de produits alimentaires. Les modèles disponibles ont des vitesses de production allant de 550 grandes boîtes à plus de 2.000 boîtes pleines de liquide à la minute. Le modèle figurant sur cette publicité est le 40L, qui peut couturer jusqu'à 450 boîtes à la minute.

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Circle 23

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Angelus stellt eine vollständige Serie von Dosenverschlußmaschinen her, die für eine Veilzahl von Ledensmittelprodukten geeignet sind. Modelle sind lieferbar mit Fassungsvermögen von 150 großen Dosen bis zu über 2.000 mit Flüssigkeit gefüllten Dosen pro Minute. Das in dieser Broschüre geziegte Modell ist das Modell 40L, das bis zu 450 Dosen pro Minute handhaben kann.

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Circle 85

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Angelus produce una gama completa de máquinas de coser latas adaptada a una gran variedad de productos alimenticios. Los modelos estan disponibles con capacidad de producción desde 550 latas grandes hasta más de 2.000 latas llenas de líquido al minuto. El modelo mostrado aquí es el 40L que puede coser hasta 450 latas al minuto.

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Circle 86

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Circle 24 on Inquiry Card

Can Mexico meet its lofty food goals?

Mexico's food industry wants to double production of food in 10 years—while expanding the variety of food for the masses. The simple diet of centuries may change, as will such considerations as better packaging for longer shelf life.

By Jim Budd
FEI Contributing Editor

By the end of the decade—perhaps sooner—Mexico's already substantial food processing industry is expected to double in size.

"There's nothing holding us back now but our own ability to grow," says Manuel Marcos, general director of the Mexican National Association of Food Packers. "The outlook couldn't be more promising."

Such optimism stems from Mexico's new status as a petroleum power and the government's determination to see that the entire country benefits from the oil wealth. At present many, perhaps most, of the nation's 70 million people live on the fringes of the money economy.

"By 1990, if all goes according to plan, all these people will be potential customers for at least some of our products," Marcos notes. "Not only will our market double in size, but it will be a young market ready to accept new products and experiment with new ideas. Half the people in Mexico today are under 20 years old."

Supplying these customers will be food processors in the private sector. The vast majority of companies will be Mexican. Foreign firms are seen as playing an increasingly diminished role; in most cases they will merely be minority partners in joint ventures.

Potential government rule

"Our greatest concern is over the position the government will take," observes Enrique Hernandez-Ponce, chief executive at Herdez, Mexico's largest processed food distributor. "For the moment, the industry is largely in private hands, but if we can't keep up with demand or meet minimum price requirements, we may find ourselves competing with the bureaucrats. I doubt that any of us would be driven out of business, but we could lose a nice share of the market."

That market is highly protected. Where imports are per-

James H. Budd is a free-lance writer living in Mexico City and is an occasional contributor to Food Engineering International.

Kurzfassung

Kann Mexiko hochfliegende Lebensmittelziele erfüllen?
Mexikos Lebensmittelindustrie hat sich ein ehrgeiziges Ziel gesetzt — die Verdoppelung der Erzeugung in weniger als 10 Jahren. Gegenwärtig liegt die Verantortung für die Erzeugung von mehr Lebensmitteln bei der Privatindustrie des Landes. Falls das Ziel nicht erfüllt wird, könnte dies mehr Teilnahme der Regierung an der Lebensmittelindustrie bedeuten. Ein anderes Ziel in diesen 10 Jahren ist der Einschluß eines breiteren Querschnitts der mexikanischen Bevölkerung als Verbraucher von verarbeiteten Lebensmitteln. Bis jetzt kauft die arme Landbevölkerung wenig verarbeitete Lebensmittel; aber dies wird als sich verändernd angesehen innerhalb des nächsten Jahrzehnts, obwohl vielleicht nicht einschneidend. Die Mehrheit der mexikanischen Bevölkerung ist jung, und dies ist ein Hauptgrund für die ansteigende Nachfrage bei der Lebensmittelerzeugung und Verarbeitung. Langfristig werden die größten Bedürfnisse für verpackte Lebensmittel in so einfachen Produckten wie Reis, Mais und Weizen bestehen. Und bessere Verpackung, um die Lagerfähigkeit dieser Produkte zu verlängern, wird eine kritische Anforderung sein.

Résumé

Le Mexique peut-il atteindre les buts de production élevés que s'est fixée son industrie alimentaire?
L'industrie mexicaine de l'alimentation s'est fixée un but ambitieux: doubler sa production en moins de 10 ans. A l'heure actuelle, la responsabilité d'augmenter la production incombe à l'industrie privée. Si le but n'est pas atteint, il pourrait s'ensuivre une plus grande participation du gouvernement dans l'industrie alimentaire. L'un des principaux objectifs de ce plan de 10 ans est d'élargir la base des consommateurs de produits de

mitted, customs duties run about 100 percent. As a result, food processing is one of Mexico's ten largest industries with nearly 200 major companies taking part. Among them are such familiar names as Carnation, Nestlé, General Foods, Kellogg's, Corn Products, Gerber, Quaker Oats and Kraft.

"The multinationals probably account for no more than one tenth of all sales," says Barnardo Casal, general director at Nestlé. "Nevertheless, the general impression is that we dominate the industry. Foreign firms, especially those in the food business, are inviting targets for demagogues. Periodically, all of us are under pressure to Mexicanize."

Mexicanization means selling controlling equity to Mexican investors in either the private or public sector. With rare exception, no foreign firm can set up shop in any area of Mexican industry save as a junion partner associated with a domestic corporation. Multinationals already operating in the country when the Mexicanization requirement became law in 1973 are not obliged to sell out, but neither can they expand without special government authorization.

Nestlé has won such authorization, Casal reports, "because we bring in needed technology, promote regional development and place Mexican citizens in top jobs. But how long we can continue this way remains to be seen."

Presently, the drive toward Mexicanization has slowed as the government concentrates on improving the national standard of living. This always has been a matter of concern, but now the resources are available. Mexico, which a decade ago was importing petroleum, today is the world's fifth largest producer of oil. On top of that, all the earnings go directly to the government, which owns the oil company.

About 25 percent of the oil revenues are to go to improving the traditionally weak agricultural sector and agriculture-based industries such as food processing.

Agroindustry is being offered a wide range of incentives, espe-

l'industrie alimentaire nationale. Pour l'instant, en effet, les populations rurales défavorisées achètent moins de produits alimentaires industriels; on s'attend à un changement, sans doute lent et progressif, de cette situation au cours de la prochaine décennie. La majorité de la population mexicaine est jeune et c'est l'une des raisons majeures pour lesquelles le développement de l'industrie alimentaire et de sa production sont essentiels. A long terme, les besoins en produits alimentaires emballés porteront principalement sur des produits simples comme le riz, le maïs et le blé. Des emballages de meilleure qualité prolongeant la durée de conservation de ces produits seront d'une importance critique.

Sumario

¿Puede Méjico alcanzar altos objetivos en la alimentación?

La industria mejicana de la alimentación ha fijado un ambicoso objetivo — doblar la producción en menos de 10 años. Por ahora, la responsabilidad de producir más alimentos pertenece a la industria privada del país. Si no se alcanza el objetivo, ésto podría significar más participación del gobierno en la industria de la alimentación. Otro objetivo para esos 10 años es incluir una sección transversal más amplia del pueblo mejicano entre los consumidores de alimentos elaborados. Por ahora el elemento rural, pobre, compra pocos alimentos elaborados; pero ésto va a verse cambiar en la próxima década, aunque quizás no de manera pronunciada. La mayoría de la población de Méjico es joven, ésta es una razón clave para que la demanda de producción y elaboración de alimentos aumente.

A largo plazo, las mayores necesidades de alimentos envasados corresponderán a productos tan sencillos como arroz, maiz y trigo. Y un requisito crítico será un embalaje mejor que extienda la vida en el almacén de estos productos.

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cially tax credits, to encourage expansion.

"That means rethinking marketing strategies," points out Javier Zendejas, director of public relations for Gerber. "Thus far the food processing industry has been concentrating on the upper strata of the population in urban areas. We cover the entire country, but Mexico City alone accounts for more than half our sales."

To be sure, the capital's metropolitan area, with its some 16 million inhabitants, is an attractive market. But there are even more people living in an estimated 95,000 tiny villages so remote they are all but cut off from the 20th century.

An Indian nation

Mexico is an Indian nation. Nine out of ten of its people are descendants of the Aztecs, the Mayas, the Mixtecs and Zapotecs, builders of some of the greatest civilizations in the Western Hemisphere.

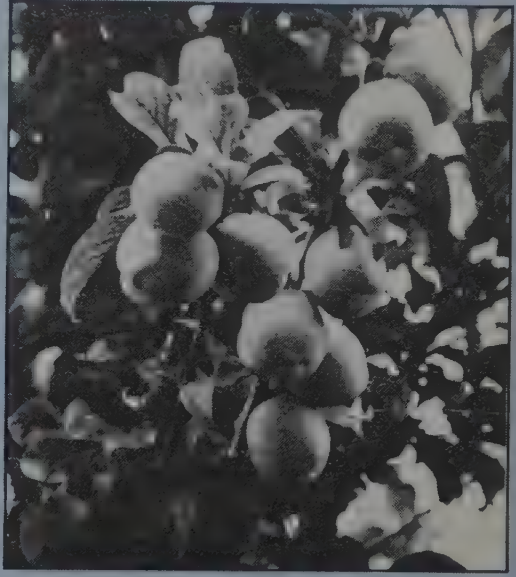
The Spaniards never colonized Mexico in the manner the British and other Europeans did what is now the United States and Canada. The *Conquistadores* came not to settle but to plunder and go home rich. Independence in 1821, after three centuries of rule from Madrid, brought only civil war, invasion and dictatorship. It was not until the Revolution of 1910 that modern Mexico was born.

The Revolution has been described as the reconquest of the country from the Europeans. After eons of direct and indirect domination from abroad, Mexico today is a land cordial to foreigners yet highly nationalistic. It is a democracy where the same political party has ruled for more than 60 years. Free enterprise thrives, yet the government regards itself as socialistic and operates hundreds of businesses from steel mills to sugar mills.

As one observer sums it up, Mexico is pragmatic.

In what might be regarded as a tribute to the food processing

(Continued on page 35)



Gerber agronomists, among others, have helped Mexican farmers grow prize winning fruits and vegetables. President Portillo has established what is called the Mexican Food System aimed at making the country agriculturally self-sufficient within the next few years.

For a broader "menu". . .

A world leader in flavors, fragrances, seasonings and the like is West Germany's Haarmann & Reimer GmbH. Now, with facilities working at full throttle, based in Monterrey, Mexico, H&R is doing its part in helping to diversify and broaden the menu of the average mexican. It's a diet that has largely gone unchanged for centuries.

Said a spokesman from H&R in Mexico, Dr. Kurt Maier:

"In a constant effort to support the nation's economy and to make the country self-sufficient, H&R Mexico is focusing its activities primarily on processes that use raw materials of Mexican origin. The early results of these efforts are our products: Natural onion-juice concentrate and natural garlic-juice concentrate.

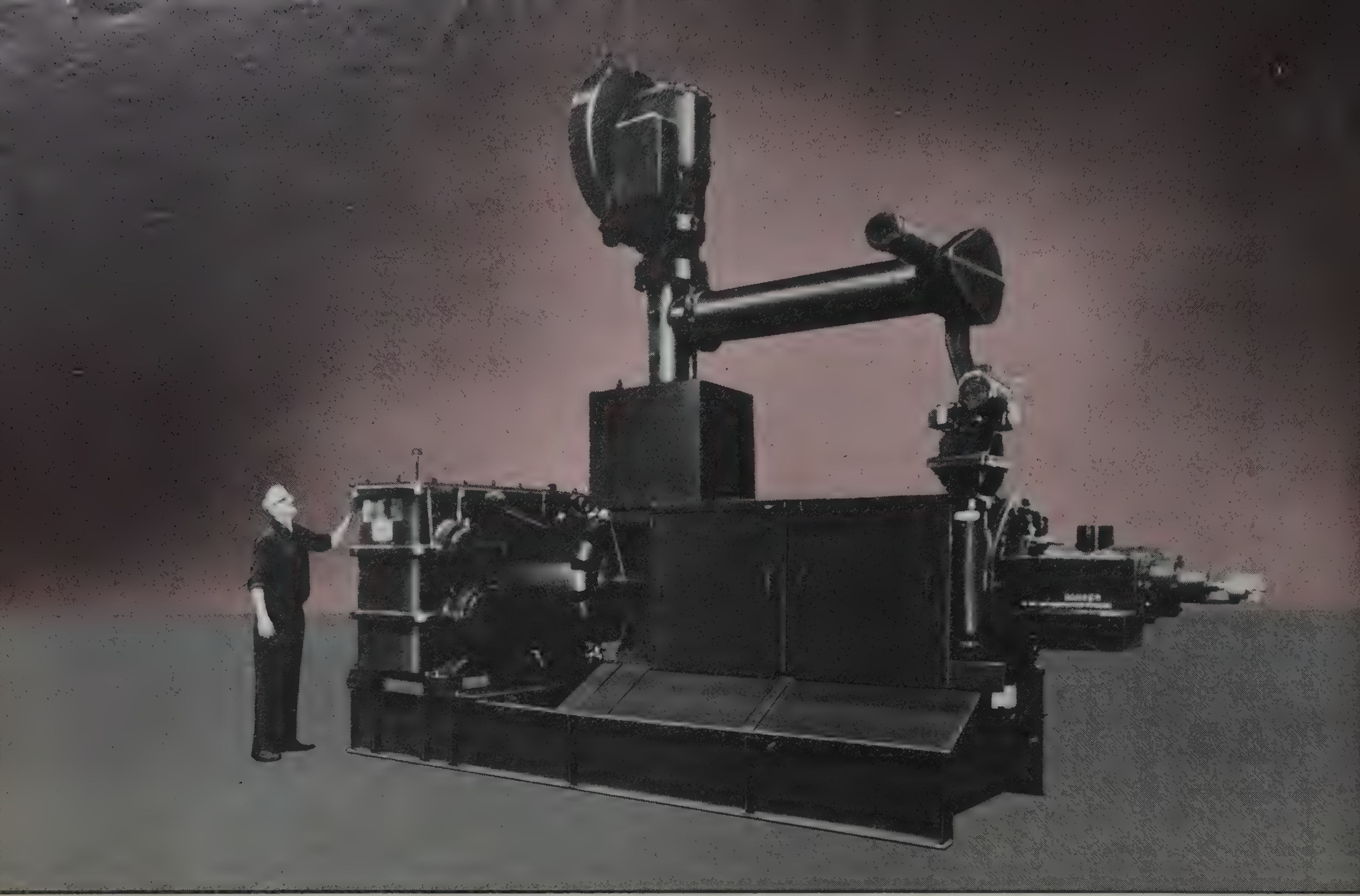
"Both have found wide acceptance by the entire food industry, especially the garlic juice. It has aroused great interest because it offers a completely new approach to the flavoring of a great variety of products for both the meatpacking and the delicatessen industries. Both products for the convenience of consumers, are available in liquid and spray-dried form."

Dr. Maier continues: "Since onion and garlic are among the most popular flavors for the Mexican kitchen, the government's plan to give a strong push to the food industry will certainly increase significantly the demand for these widely accepted flavors.

"Apart from these the flavors, the greatest demand in the course of the government's stepped-up food program will certainly be the well-accepted citrus types—in pure form as well as combined (for the soft-drink and instant-drink industry) and spicily modified (for cookies).

"Undoubtedly," Dr. Maier stresses, "today's leading flavors for such products as jellies, desserts, 'atoles' and other starch products—which are strawberry, vanilla and chocolate—will remain so within the oncoming program.

"We at H&R hope to make a significant contribution to the government's ambitious program." ☐



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Anderson International is processing technology

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For more information contact our process engineers at Anderson International Corp, 19699 Progress Drive, Strongsville, OH 44136 Ph: (216) 238-5800.

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Circle 26 on Inquiry Card

industry, sociologists maintain a Mexican enters the middle class when he begins to eat white bread. Most Mexicans have yet to enter the middle class.

"Soft drinks and beer really are the only processed foods purchased by all segments of the population," notes one executive. "The per capita consumption is one of the highest in the world. Any tourist can tell you why. They are afraid to drink the water."

More processed foods

In other areas, however, sales of processed foods have zoomed during the past 25 years.

"But you have to realize we were starting from zero," the executive adds. "We still have a long way to go."

Custom and tradition are the big barriers.

Mexicans of every class long have believed in the sanctity of a meal prepared from scratch in the kitchen. Fresh fruits and vegetables are available throughout the year. For a woman to serve her husband canned peas would be to invite rebuke if not divorce.

The wealthy are accustomed to a staff of servants to squeeze their oranges and slice their pineapple. The less affluent might prefer opening a can or bottle, but such products to them are luxuries.

"About 20 years ago, Campbell's came in here and we got the account," recalls a Mexico City adman. "At the time, I thought any campaign we might come up with would flop since the Mexicans make such wonderful soup at home."

Campbell's, however, has been doing quite well. So, too, for that matter, are most of the other firms, foreign and domestic, in the industry.

Home made soups may be more tasty, but the contents from a can are ready for serving within minutes. Convenience is becoming as important in Mexico as it is in the rest of the world. Cooks and maids no longer are as easy to find as they once were. Housewives have learned to keep their pantries stocked with canned goods that will tide them over in emergencies. These days many families open a can or two of something or other every day.

Exports mean profits

Exports also help keep canning companies profitable.

At Del Monte, Nick Diez, the man in charge, says that exports account for 20 percent of his sales.

"We really introduced asparagus to Mexico," he recalls. "We believed we could supply customers in Europe from Mexico and we were right."

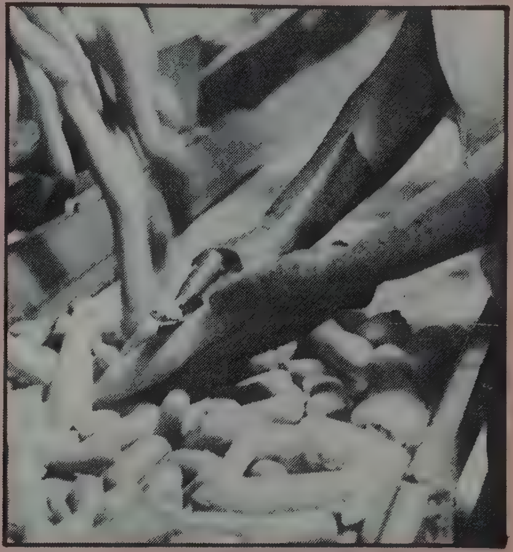
Nearly 20 years ago Del Monte began operations in the Bajio, an area about 250 miles north of Mexico City that has become the center for the country's canning industry. The firm worked carefully with local farmers, instructing them in ways to improve their crops.

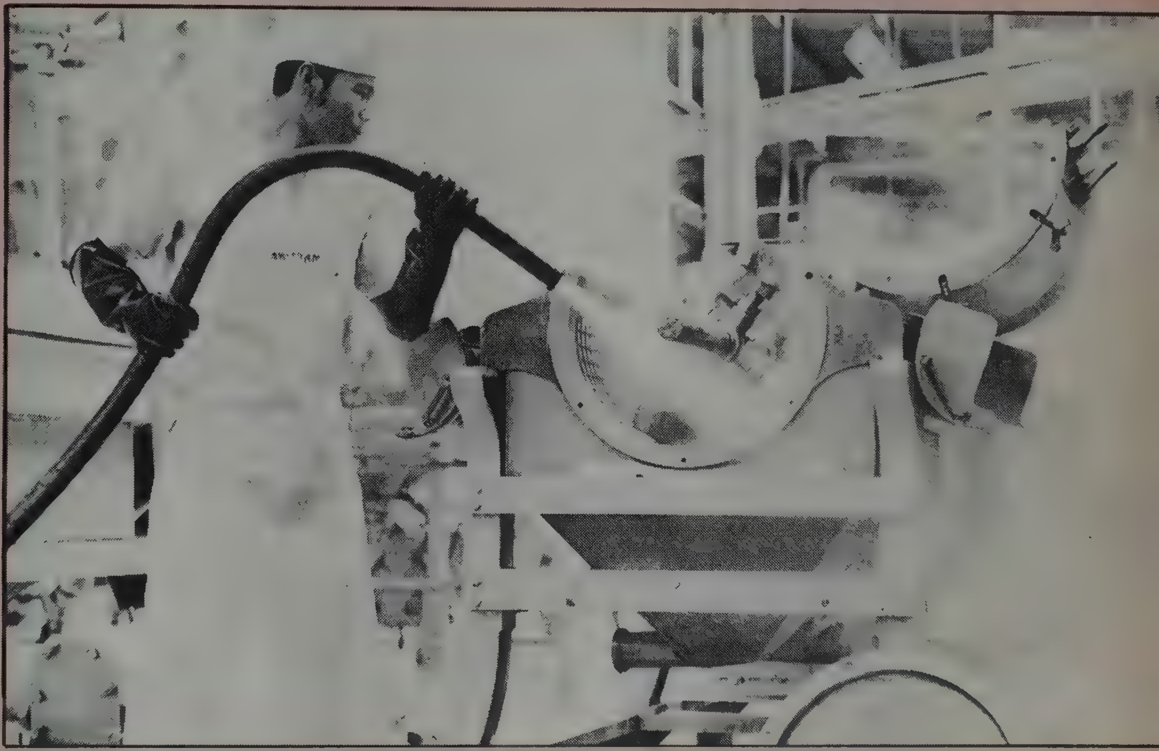
Working with farmers, however, has been a great obstacle for many in the food processing industry. Agriculture long has been the weakest segment in Mexico's economy.

The 1910 Revolution was, to a large degree, touched off when millions of field hands rose up demanding land of their own. As a result, the great estates built up during the 19th century—the haciendas—eventually were divided up among the peons who worked them. The plots, often too small to be efficient, were assigned—not given—to families. The family

(Continued on next page)

Foreign technology and equipment is expected to play an increasing role in meeting Mexico's food production and processing goals.





Increasing production of processed foods will be a central aim of both the private and public sectors in Mexico in the next decades. Indeed, the food processing industry in Mexico is expected to double in size by the end of the decade.

had the right to the land as long as it used it, but if left untended, that right was lost. The plots could be neither sold nor rented. Most dwindled into poor subsistence farms where a bit of corn and not much else was grown.

Ejidos they were called. Dealing with ejido farmers could be difficult in the best of circumstances. On the whole they tend to be extremely conservative, uninterested in experimenting with new crops or adopting new technology. The law discouraged any agreements that hinted of restoring the old estate or hacienda system.

Late in 1980 the law was changed. Ejidos now can be joined with larger 'production units,' the land can be rented (as long as the *ejiditarios* continued to work it) and the ejido farmers may enter into production partnerships with food processors.

"This was a very controversial measure and the left-of-center representatives in Congress were deeply opposed," recalls one dairy industry official. "But the fact is, agriculture is a disaster in this country and the system had to be changed. We had to import about ten million tons of grain last year and we can't go on like that forever."

Pushing reform

President José Lopez Portillo pushed for the reforms which make the ejido system more flexible. The chief executive decreed the establishment of what he called the Mexican Food System aimed at making the country agriculturally self-sufficient within a few years. This year land under cultivation is being increased by eight percent, a figure that planners say will be matched throughout the 1980s.

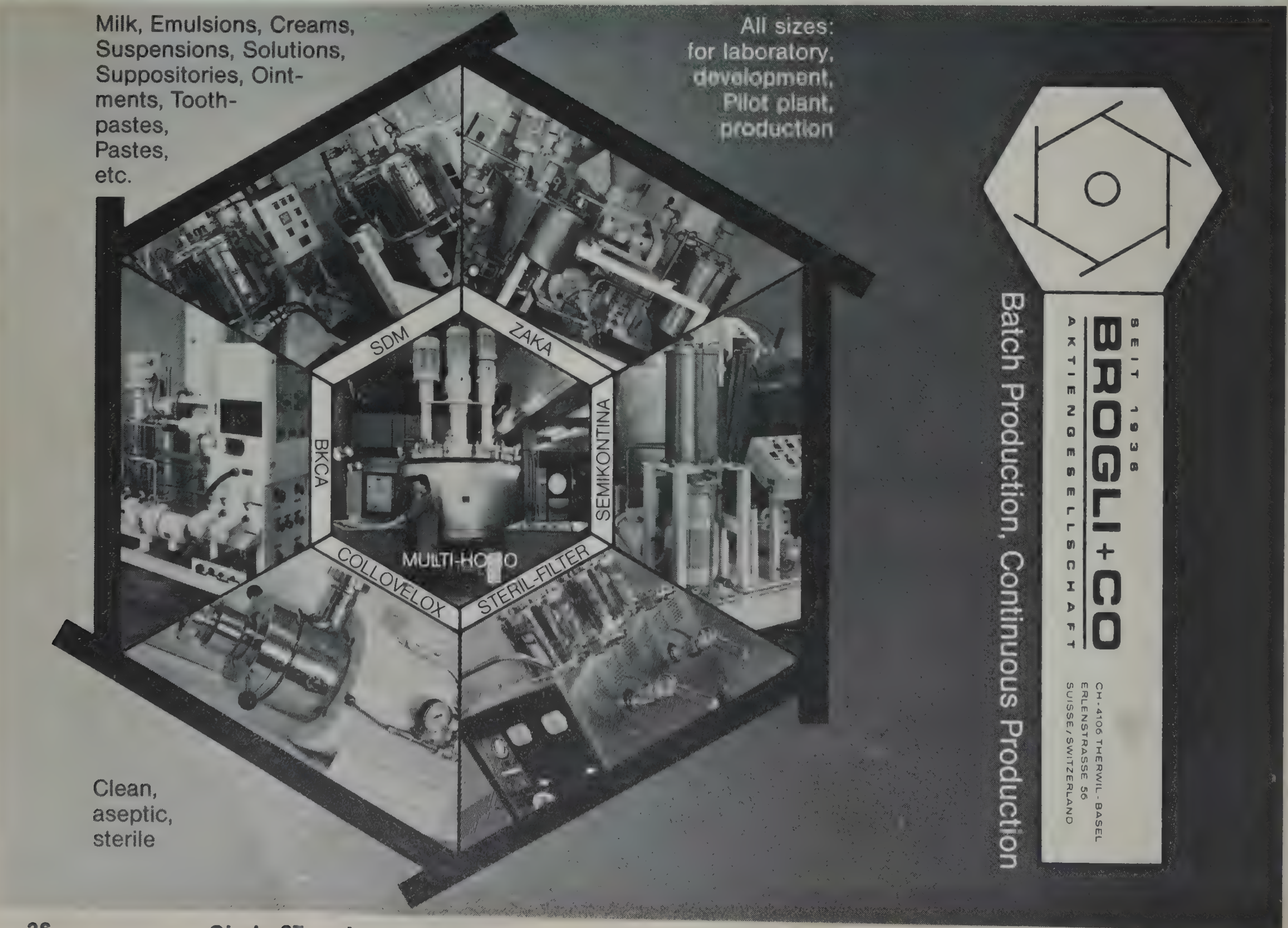
"The food processing industry is recognized as a key element in the success of this program," says Marcos at the Association of Food Packers. "For the first time our contributions are being recognized. Agrobusiness is bringing about a better life for the farmer and his family."

Encouraging, Marcos reports, are new attitudes toward price controls. "Officials are taking a more reasonable attitude," he says.

Increases now are being authorized rapidly, essential in a country where inflation in 1980 hovered near 30 percent. Price controls apply only to some items, such as canned chiles and tomato puree.

"All baby foods are subject to price controls," notes Zendejas at Gerber. "Because of that, we haven't earned a profit during the past three years. Heinz and Beech-Nut have left the market entirely."

(Continued on page 40)



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Circle 27 on Inquiry Card

Here's why your cold storage doors should be built by Jamison

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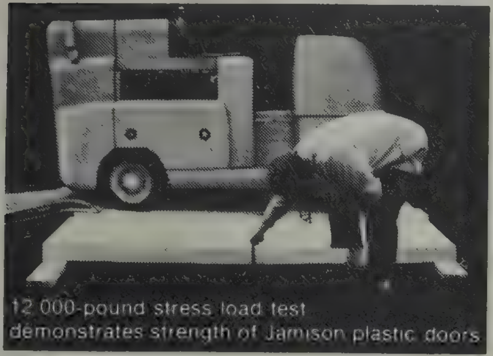
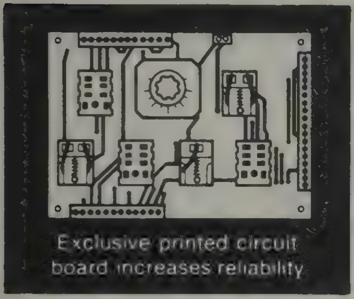
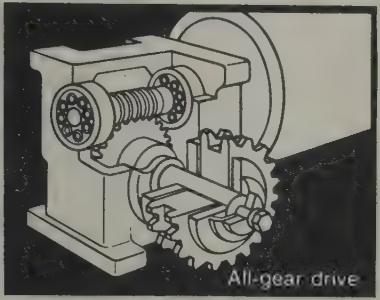


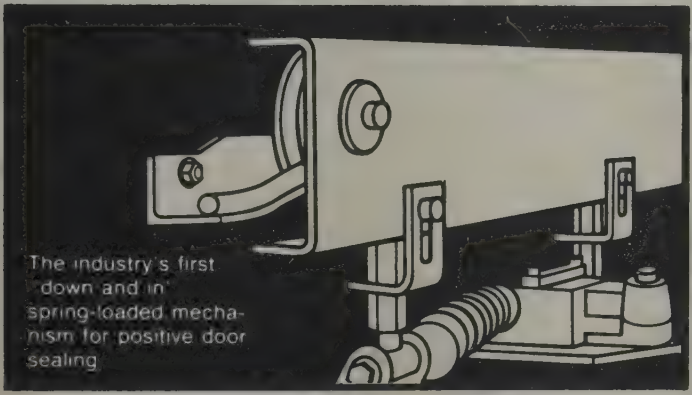
12 000-pound stress load test demonstrates strength of Jamison plastic doors



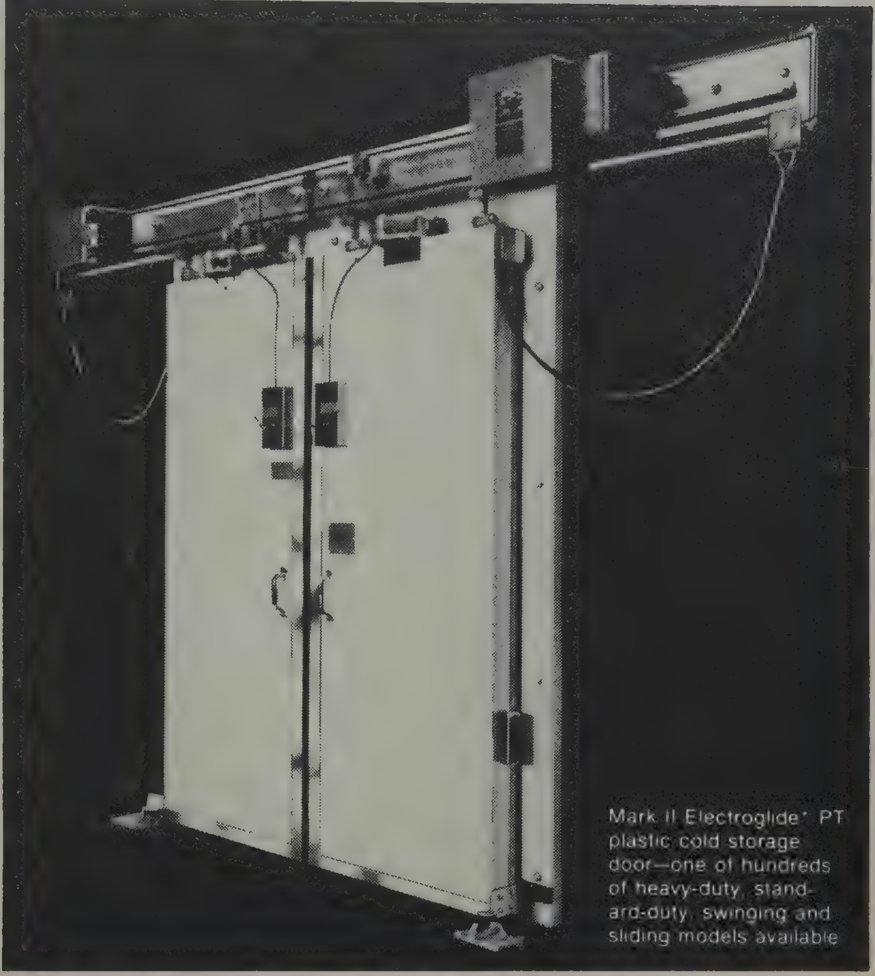
Exclusive printed circuit board increases reliability



All-gear drive



The industry's first "down and in" spring-loaded mechanism for positive door sealing



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New Mark II Electroglide PT power operated doors feature ultra-high reliability all-gear drives designed for one million cycles. Plus you get the industry's only built-in motor overload protection.

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You get an almost unlimited choice of standard models and options to meet your needs. More important, if you need something superspecial, we'll engineer and build it for you.

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Circle 28 on Inquiry Card

CREPACO

Systems-Engineering can give you a better product at lower operating costs.

We've been around a long time working with many of the country's top food plants, large and small.

So we've become highly resourceful in being able to quickly recommend the production equipment and systems to meet your most demanding operating requirements for:

- Uniform product quality;
- High efficiency product handling;
- Effective use of plant floor space; and,
- Significant cost savings in the use of labor and energy.

Before you make any investment in expansion, modernization or a new plant facility, contact us for a no-obligation evaluation. We're doing a lot of things you should know about in automated ingredient and product handling, in processing and in refrigeration. Write: CREPACO, Inc., 8303 W. Higgins Rd., Chicago, Il. 60631.

In Europe, write: CREPACO International, Inc., 28 Bld. St. Michel, 1040 Brussels, Belgium. Telephone: 736-01 61; Telex: 26243.

Sanitary Pumps are performance-proven in food plants across the country to provide reliable, low-maintenance service.

Resilient Rotor models are available in a wide range of sizes with seal arrangements for sanitary transfer and metering applications and with standard 5-lobe or single-lobe rotor styles. Stainless steel rotor models can be ordered in all popular sizes.

Stainless Steel Centrifugal Pumps are assembled as sanitary or industrial models in sizes to meet most CIP and other uses such as liquid shortening, yeast slurry, etc.

Circle 79 on Inquiry Card

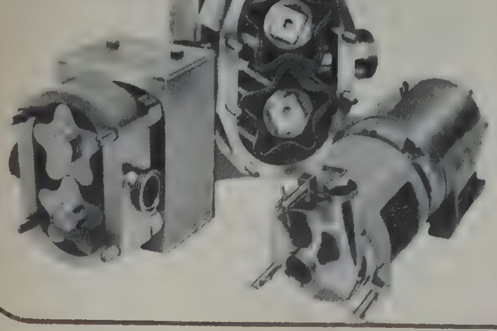


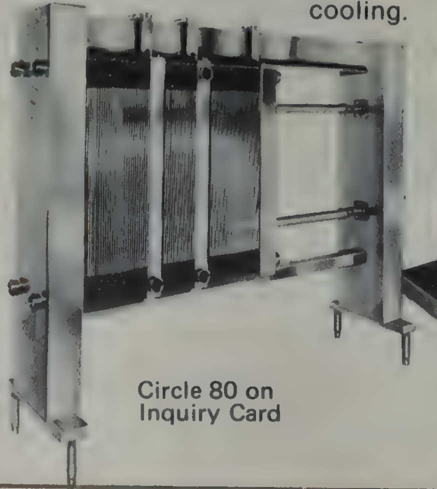
Plate Heat Exchangers

provide superior Heating and Cooling control within 2°F. (1°C) for processing flowable products including those that tend to produce deposits or are heat sensitive.

CREPACO engineers can combine frame and plate sizes, number of plates and streaming arrangement to provide

- Optimum product retention time to assure adequate protection of product identity in flavor and quality;
- An inherent capability for diverse or multiple duty operation; and,
- Ease of expansion for high capacity throughput.

For significant energy conservation, hot and cold product flows can be routed in adjacent streams, achieving an initial stage of heat transfer while minimizing BTU requirements for final heating and cooling.



Circle 80 on Inquiry Card

Swept Surface Heat Exchangers

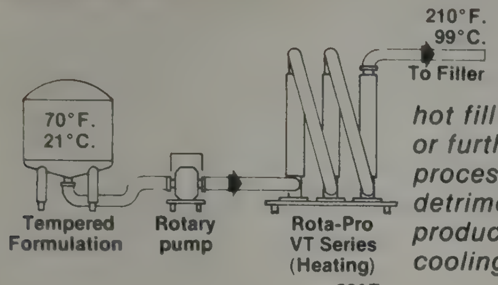
Proven in hundreds of applications to meet the most effective means of continuously and uniformly treating or processing any pumpable product through a wide range of temperatures and processes.

- Available in vertical and horizontal designs to assure optimum processing proformance with minimum energy use.

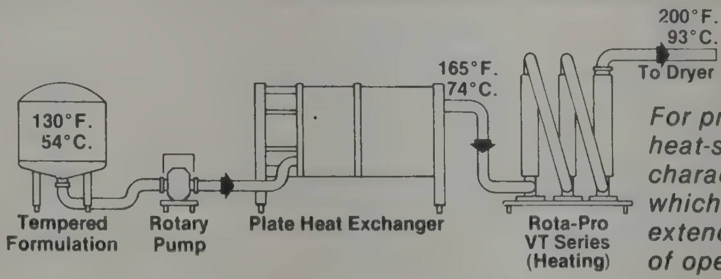
*Choice of Dashers and Scraper Blades to meet critical product and flow characteristics while maintaining superior BTU exchange.

*Choice of sanitary and aseptic type seal arrangements to assure long, trouble-free operation.

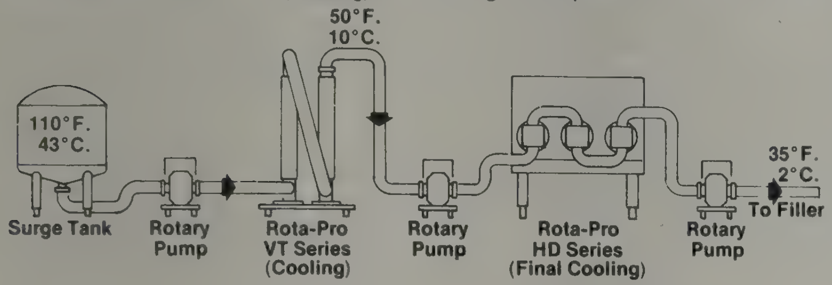
Circle 81 on Inquiry Card



For cooking operations where a hot fill is necessary or further mechanical processing is detrimental to the product and ambient cooling is required.

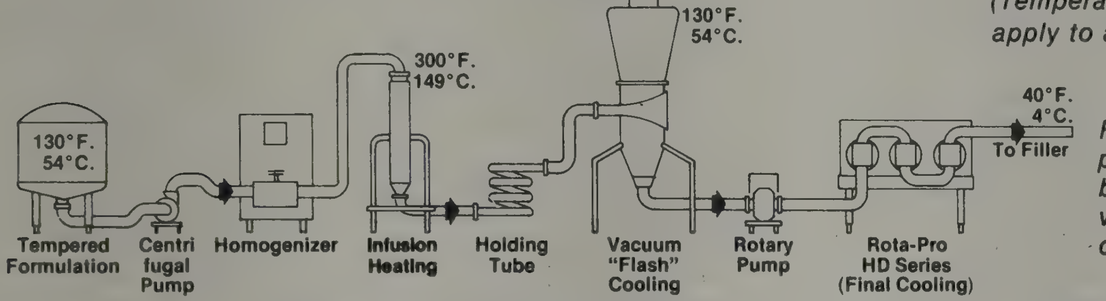


For products with heat-sensitive characteristics which require extended periods of operation.

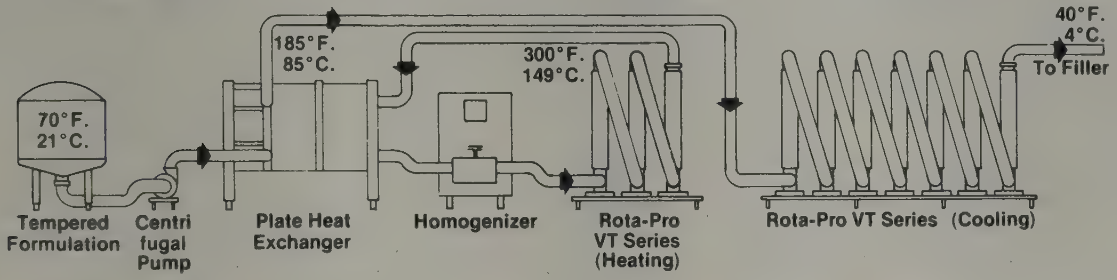


For initial cooling of product where body is not critical. Final cooling is accomplished in HD Series Rota-Pro to develop body and textures or crystallization when required.

(Temperatures shown are typical and do not apply to any specific product.)



For systems where product-to-product regeneration benefits can be utilized and where product viscosity develops rapidly upon cooling.

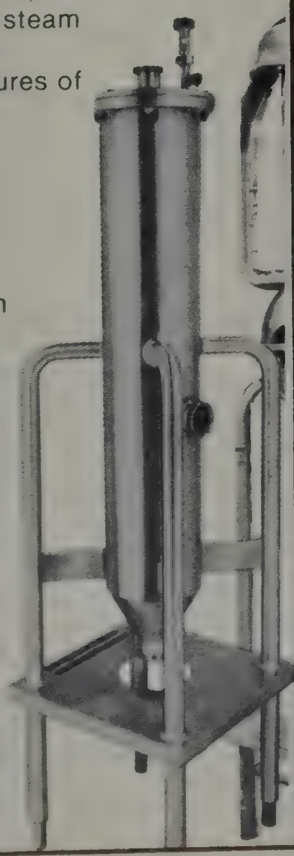


For wide range of products from light syrups or milk to heavy puddings. Bulk of heat treatment is accomplished in the Infusion Heater and Vacuum "Flash" Cooler. Most efficient method for heating/cooling.

Infusion Heater. Compact, simple and rugged in construction, the Infusion Heater provides controlled, gentle, near-instantaneous direct steam heating at the higher processing temperatures of 220ºF. to 300ºF. (104ºC to 149ºC.)

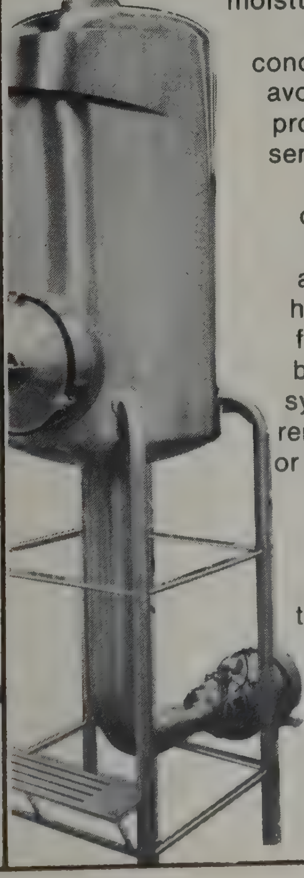
- Free-falling product is introduced into a controlled pressurized atmosphere of steam with minimal risk of product shock;
- Whisper quiet action;
- Minimal product contact virtually eliminates cook-on or burn-on off-flavors;
- Precise control;
- Trouble-free CIP.

Circle 82 on Inquiry Card



Vacuum Cooler. A high efficiency vessel generally used with our Infusion Heater to flash-off moisture equal to that added by steam condensate, thereby avoiding dilution of product. With heat sensitive products, instantaneous cooling prevents destabilization and formation of heated or cooked flavors. Unit may be used for other systems requiring removal of volatile or unwanted flavor taints that can affect product odor and taste. Such vacuum treatment results in vastly improved flavor uniformity or standardization.

Circle 83 on Inquiry Card



Multi-Process Tanks are available with optional features designed to assure trouble-free performance as integral components of a processing system. Most tank models can be engineered with zoned jackets and agitator or blender arrangement for cooking, heating, holding, mixing, incorporating, batching, blending, storing or fermenting.

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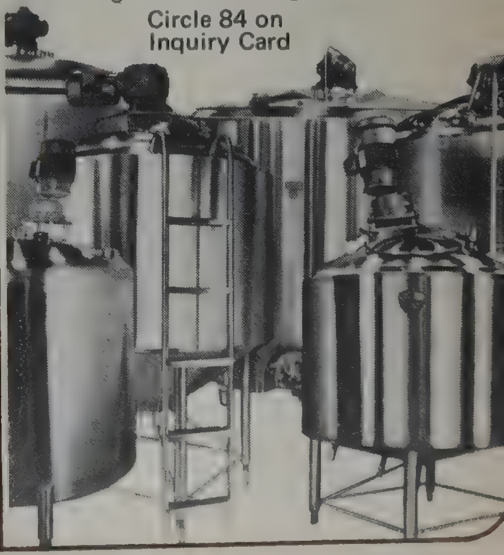

Circle 29 on Inquiry Card

Need for foreign technology

U.S. and other foreign technology is likely to be needed as an increasing number of food processing operations expand. Spurring this expansion not only are fiscal incentives but a worry that the government will fill any vacuum left by the private sector.

The government now is the largest single customer of Mexico's food processing industry. About 25 percent of all production is purchased for resale through commissaries operated for public employees or to Conasupo, (the National Basic Supply Company).

Conasupo operates no-frills supermarkets and stores throughout the country, distributing many of its own brand processed foods purchased from the private sector. Anyone may shop in a Conasupo establishment and take advantage of savings averaging 15 percent. Remarkably, only the 'truly needy' regularly take advantage of this. Conasupo outlets tend to be poorly stocked and offer shoppers no choice in products; hence, those who can afford to buy elsewhere.

New rule for Conasupo

In recent months there has been talk of getting Conasupo into the food processing business rather than having it continue to buy from private sector processors. For the moment, such a step has been ruled out, but the possibility remains that if demand cannot be met in the future, Conasupo will become more involved in production.

Presently, government activity in food processing is confined largely to seafood.

"We account for about 20 percent of the market," says an official at *Productos Pesqueros Mexicanos* (Mexican Seafood Products). "Ours is something of a social role. Malnutrition is a serious problem in Mexico. We believe a partial answer may lie in increasing the consumption of seafood. This means making canned seafood available at the lowest possible cost and improving distribution."

In addition to canned seafood, *Productos Pesqueros* also is distributing dehydrated fish into which soy flour has been blended to lower costs.

"Our challenge is to convince people that seafood indeed is good," adds the official. "Changing eating habits is not easy. We have a monumental task in front of us, which is why the government, not the private sector, is involved."

Similar ventures in the past have failed. Campaigns urging greater consumption of soy flour in place of expensive meat have had little success.

In return for fiscal and other incentives (among other things,

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"clean labels," natural flavor, and so many ways to use them!

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More quality ingredients go into Minor's bases, so more quality comes out.

They contain large proportions of the best meats, poultry and seafood available, plus stocks, natural juices and proprietary seasonings. That's why they are different from ordinary bases, and better in so many ways!

They make instant gallons of wholesome stock, as good or better than "stockpot stock," at about one-fifth the cost. Serve as complete, reduced-sodium flavor systems for recipes and formulations. And reduce ingredient and production costs in a number of ways.

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LM-1704PC

as of Jan. 1, a 10 percent federal sales tax no longer is applied to food products), the food processing industry is expected to find ways to help more Mexicans eat better. This means better distribution of low-priced items into once remote villages that now are being connected by highway with the rest of the country.

Growth in canning

According to the Mexican Government's Coordinating Office for the Production of Basic Products, biggest growth in food processing during the next five years will be seen in the canning industry. Where in 1980 about 27 percent of the fruits and vegetables produced in the country were industrialized, by 1985 the figure is expected to be 58 percent.

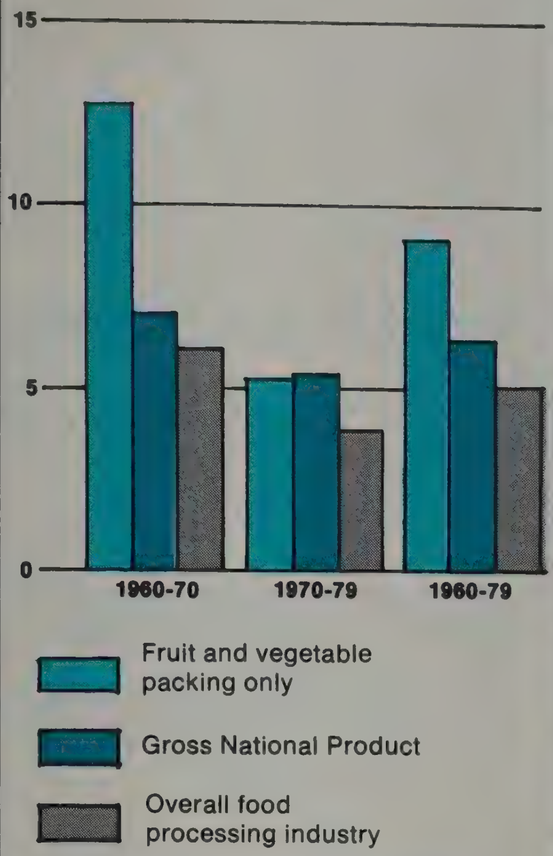
"We're committed to bringing down prices, or, at least, not boosting them at inflationary rates," says Julio Manzano, a marketing official at Clemente Jacques, one of Mexico's leading canning firms. "Obviously, if we can get our volume up, we can keep our prices down. Canned chiles once were considered a luxury item, but now they are more of a staple. We'd like to see that become true for more of our products."

Sales of instant coffee, points out Casal at Nestlé, have increased about 12 percent annually during the past five years. While the European company expects to maintain its dominant market position, it looks for increased competition from local firms. Casal says nothing about increasing capacity at his shop.

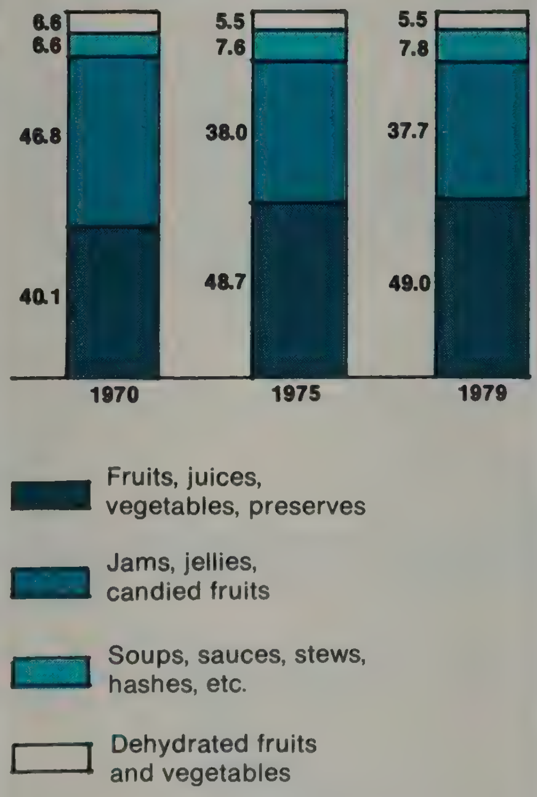
Nestlé also is active in milk-based products where the outlook for growth is not so bright. Mexico is a net importer of milk and, if present trends continue, the country will be buying abroad in 1985 nearly twice as much as the 216 million gallons it purchased last year.

"Price controls leave dairy farmers with only marginal profits," observes José Luis Villicana, director of the Milk Products Chamber. "Since powdered milk is available from the United States at such low cost, it is unlikely that producers of fresh milk in Mexico will be able to raise their prices to any substantial degree. Naturally, we would like to forecast greater growth, but we must be realistic."

Growth (%) of Mexico's food industry



Production (%) of processed foods in Mexico 1970-1079



Source: Mexican government coordinating office

Corn production, 10.8 million tons in 1980, should hit 13 million tons in 1985, but another 4.3 million tons will need to be imported. Wheat production also is scheduled to increase yet fails to meet demand. Growth for industries in these areas will be limited.

Manufacturers of soft drinks, beers and wines are taking a hard look at the availability of raw materials. Generally speaking, the outlook is good but lately Mexico, traditionally a sugar exporter, has been required to import sugar. Here again, price controls are blamed. Growing sugar these days is only marginally profitable in Mexico.

"The soft drink industry is subsidized, getting sugar below real cost," says one bottler. "I doubt that things can continue as they are, but none of us can predict what kind of changes are coming. The sugar subsidies might be phased out gradually or eliminated overnight. We can only wait and see."

Wineries in Mexico also are brandy distilleries and brandy has become the best-selling liquor in the country (producers of tequila are limited by their supplies of raw material). There is more profit turning grapes into brandy than into wine, although several firms do produce wine for prestige purposes.

Good future for wine

"I'd pick wine for growth in the spirits industry," says Nick Noyes, a Mexico City restaurateur. "Right now no Mexican wine is a prize winner, but sooner or later one will come along. Beer and liquor sales are going to do all right, but the volume in wine could really soar."

Dominated by three breweries, the beer market in Mexico is extremely competitive. It is one area where new products and new packaging make a difference. No one has bothered to introduce plastic bottles or cans for soft drinks, but Mexican beer

(Continued on page 43)

Packaging problem solvers

Do packaging line problems cost money? You bet they do! Excessive downtime, numerous rejects, expensive skilled labor all affect the bottom line. NJM packaging machinery is engineered to be rugged, reliable and simple to operate. So you can expect less downtime, fewer rejects, and lower labor costs. For filling, capping, imprinting, or labeling, there's an NJM machine to help solve your packaging problems.

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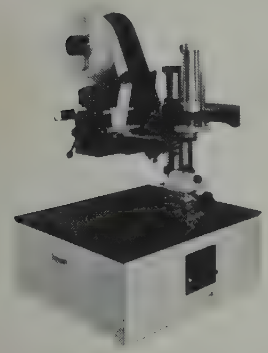
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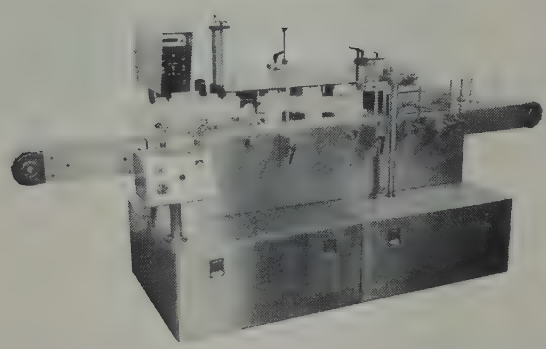
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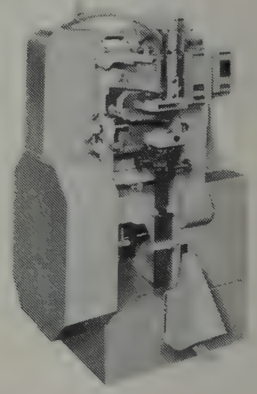
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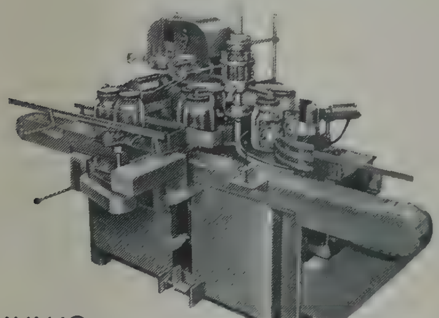
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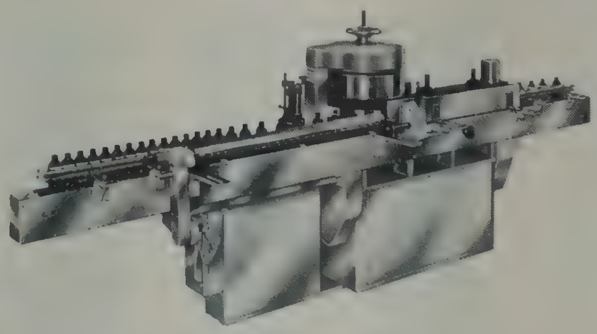
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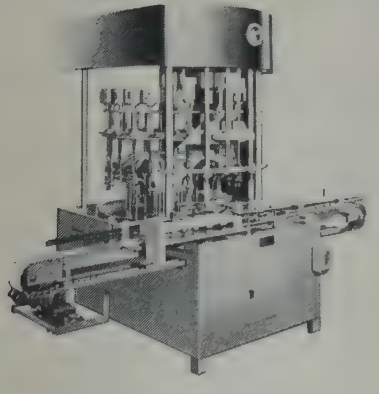
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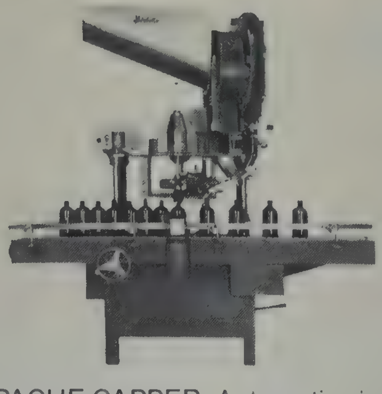
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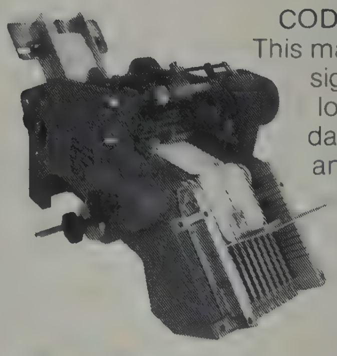
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"Packaging can make a difference," says Zendejas at Gerber. "About five years ago we switched from cans to jars and increased our sales by 105 percent."

Some people in the industry foresee a shift to plastics for containers in the years ahead. Plastics are made from oil and, as the petrochemical industry develops, more plastic container material should become available. Even now supermarket bags usually are plastic rather than paper.

Products for microwaves

Some processors are considering products for microwave ovens, but the majority show little interest. Thus far, frozen foods have yet to succeed in Mexico and microwave products are given even less of a chance. No one holds out much hope for frozen foods, at least not during the rest of this decade.

"No one's ever used them," says one executive. "Cans may be something of a luxury, but even in the lower economic levels people buy canned goods now and then. As their situation gets better, they may buy more, but even the wealthy people in Mexico aren't accustomed to frozen foods."

At the Food Packers Association, Marcos doubts that any further investments will be made in promoting frozen foods. "Any effort in that direction, as the law stands now, would have to be made by a company controlled by Mexicans," he observes. "I rather doubt that Mexicans would risk their capital on a frozen food venture."

The trend in food processing, as Marcos sees it, is toward a few large companies that will dominate the market. "Good selling and distribution techniques are essential for success and only the big outfits have these," he says. "Besides, it's the big firms that benefit most from fiscal incentives."

Multinationals will still have a part to play, but no longer will they be stars. They can delay Mexicanization by stepping up their contributions to the economy, but eventually it will come. Home offices must ask themselves whether they want to stay on as partners in companies they do not control.

"We recommend that they do stay," says an official at the American Chamber of Commerce of Mexico. "Naturally, they need to be very selective about choosing a partner; that is understood. But the outlook for the food processing industry here is very promising. Very promising indeed." □

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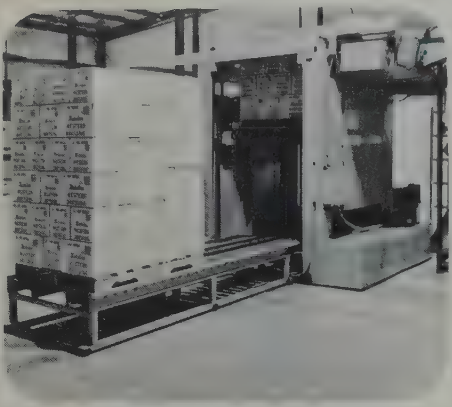

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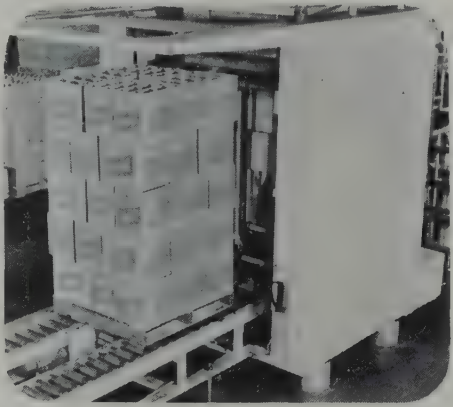

SEMI-AUTOMATIC

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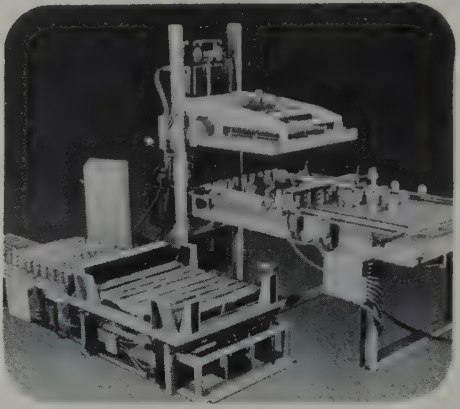

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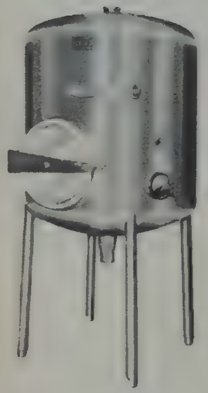

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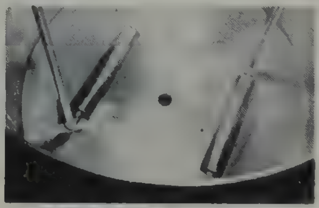

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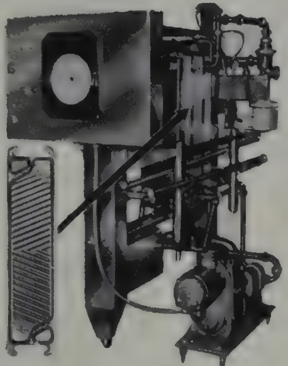

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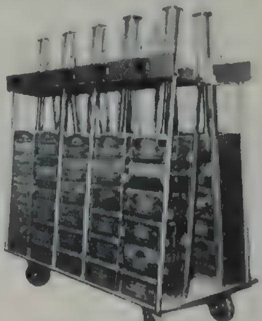

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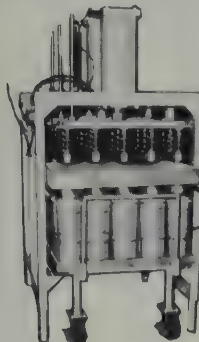

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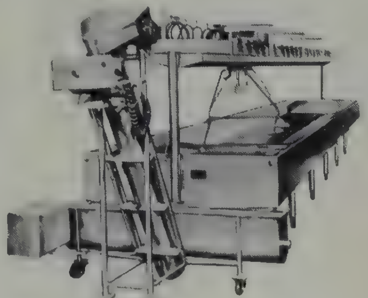

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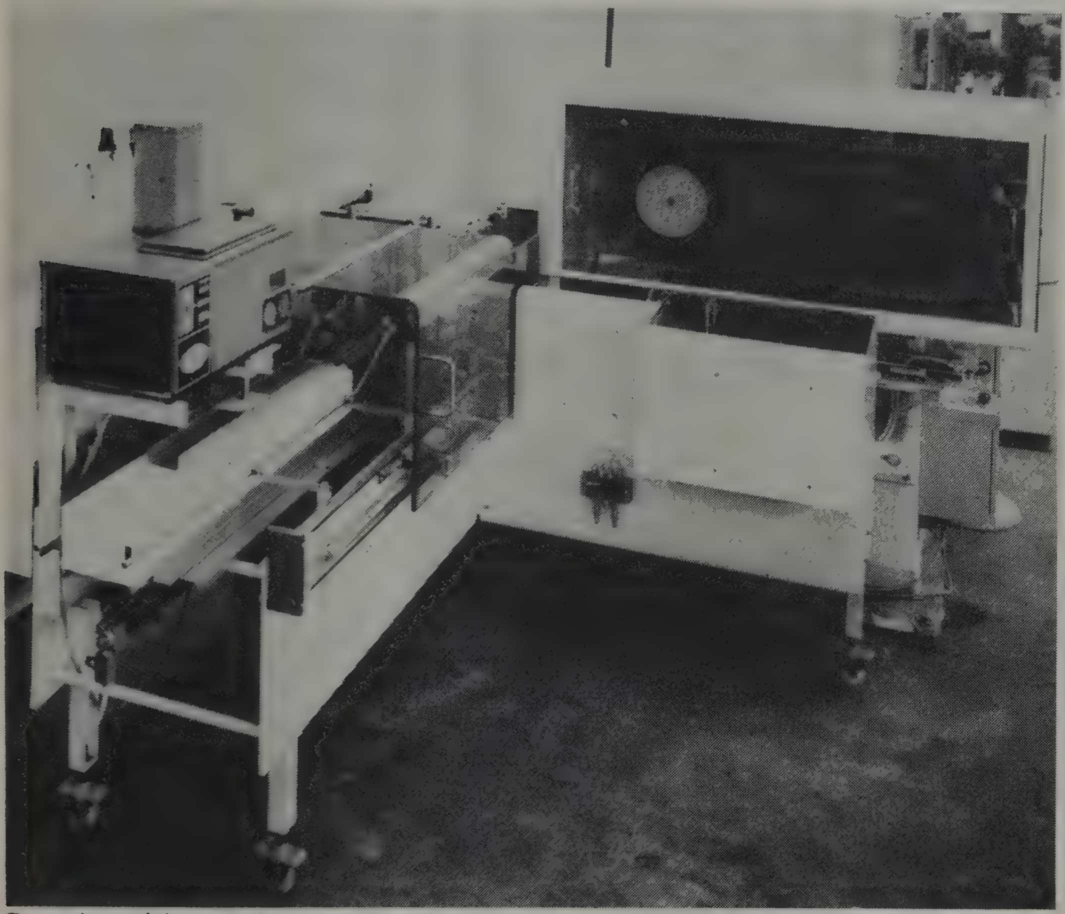
Circle 33 on Inquiry Card

Expensive dry-soup packaging problems met and conquered

By Von H. Höller
Hamac Höller (Bosch Group)
Bergisch-Gladbach

The author describes how his equipment overcame such problems as weighing, handling and packaging multiple, lumpy ingredients with maximum efficiency and minimal problems and their concomitant loss potential.


Bag-batching unit combined with bulk-packaging machine.

Two trends are apparent in the steadily-growing dry-soup-mix market. One is that better quality, and appearance, is necessary. The other is that a bigger variety of soups is developing. Thus, there are growing demands for more efficient and complex machines to package them. Enter Robert Bosch GmbH, West Germany, and its packaging plant for multi-ingredient dry soups. Bosch has sold 10 complete lines to one major soup producer.

In today's market, it's desirable to put as many different ingredients as possible in soup mixes and, of course, to weigh them precisely in the process. It's also most desirable to make the product look as much as possible like a "home-made" soup. That is, the ingredients in the mixture should, as far as pos-

(Continued)

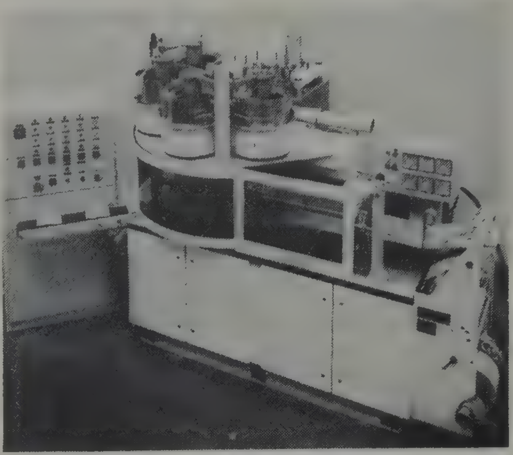
Kurzfassung	Résumé	Sumario
Umfangreiche Verpackungsprobleme für Trockensuppe entgegnet und besiegt Grad. Ing. von Höller beschreibt ein Verpackungswerk für Suppen mit vielfachen Zutaten. Die hervorragendsten Züge des Werks sind Portionsabwiegen, sanfte Behandlung der klumpigen Zutaten in den aus mehreren Bestandteilen bestehenden Suppen, die in Beutel verpackt werden und leistungsfähige Verpackung der flachen Beutel in großem Volumen. Offensichtlich ist eine breite Mischung von Zutaten, die schwierig zu messen ist, auch schwierig genau zu wiegen. Die Auslage der Ausrüstung, die hier beschrieben ist, erwies sich als den Anforderungen gewachsen, und sie ist außerdem auch kostenwirksam.	**Résolution de complexes problèmes d'emballage posés par les soupes déhydratées** L'ingénieur diplômé Von Höller décrit une installation pour l'emballage de soupe comprenant des ingrédients multiples. Les caractéristiques les plus importantes de l'installation sont son dispositif de pesage des portions, son traitement en douceur des ingrédients grumeleux des soupes à composants multiples en cours d'ensachage, et son efficace emballage en vrac des sachets plats. Evidemment, une large gamme d'ingrédients difficiles à mesurer peut également s'avérer difficile à peser de manière adéquate. Le matériel décrit ici a prouvé qu'il était à la hauteur du défi tout en étant efficace du point de vue du coût.	**Complejo embalaje de sopas deshidratadas; problemas hallados y conquistados** El ingeniero graduado Von Höller describe una planta de embalaje para sopas con ingredientes múltiples. Las características más destacadas de la planta son el pesado de porciones, tratamiento suave de los ingredientes aterronados en las sopas de componentes múltiples que se envasan en bolsas, y eficiente empaquetado a granel de las bolsas planas. Obviamente, una extensa mezcla de ingredientes que son difíciles de medir puede ser también difícil de pesar correctamente. La disposición del equipo aquí descrita probó estar a la altura de los desafíos, y es también efectiva en cuanto a costes.

sible, retain their natural appearance.

The Bosch equipment was designed to solve such problems. A special system, illustrated here, was developed to package multi-ingredient soups in flat bags. The basic machine employed is the BM-type for forming/filling and sealing (f/f/s) flat-bagged product. Equal attention is also given to packaging the filled bags, during which the ingredients must not be damaged in handling. And final bulk packaging must be handled as efficiently (economically) as possible.

The Bosch plant has made its debut to the trade in Europe, and it will certainly be viewed as a good step forward in f/f/s technology. The system *(see drawing)* is comprised of: (1) A flat-bag f/f/s machine of special design; (2) a continuously operating vibratory-levelling unit; (3) a checkweigher; (4) conveyors; (5) a bag collecting and batching unit and (6) a cartoning machine.

Let's examine each piece of equipment.



Flat-bag form/fill/seal machine, metered for five ingredients.

> "It's most desirable to make the product look as much as possible like a 'home-made' soup."

The flat f/f/s machine consists of a bag-making section for flat bags, a DOS-ST three-piston filling unit, four auger feeds and a switch cabinet. The equipment is arranged compactly around the rotating bagging-machine table, and each piece is easily accessible.

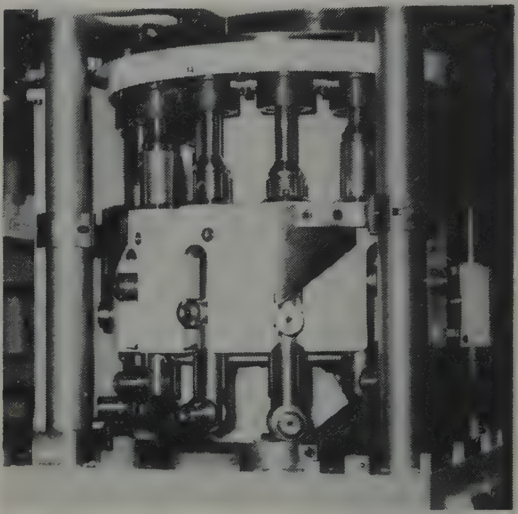
For *bag-making,* the wrapping foil is drawn over a folding plough from the reel, and it's sealed on three edges. The draw-off is registered with the print format. The bag is then cut to the proper width, and the open bags are transferred to a rotating table. Two new, special devices are worth emphasis here:

—The mechanism that draws off the wrapper can be switched on/off with the machine running. This is important both when starting the machine and when removing product samples for weight-checks. The drive is interlocked with the filling cycle (up to 110 cycles/minute), but it can be blocked with a brake. Thus, when starting the plant and changing the filling operation, wrapping material is saved, and/or a higher output is reached.

—To protect the seal when the wrapper stops, the sealing jaws are fitted with a pneumatic system that stops them—unlike a mechanical system—repeating the motion. The sealing tool continues to work. But it will not make a seal when the feed is switched off, because a compressed-air cylinder intervenes to reduce the stroke.

In *filling,* portions of floury products with high fat content are accurately weighed with a DOS-ST three-piston filler. Consisting mostly of a large tank, this metering unit holds the product to a specified level; there is a rotor positioned beneath it. This rotor *(see illustration)* is fitted with cylinders and pistons, which receive product and compress it as it rotates. At a given position, the measured portion is pushed into the chamber offset on the rotor, which has risen to the top.

This chamber takes the first soup ingredient to the filling point. For weight accuracy, the metering piston first executes a longer-than-necessary stroke; thus it receives more product than needed, then compresses it by partially recoiling. So, unlike previous methods, cavities in the product are avoided. There are three adjustments: Portions can be determined in advance, the length of stroke can be set, and the degree of compression adjusted.



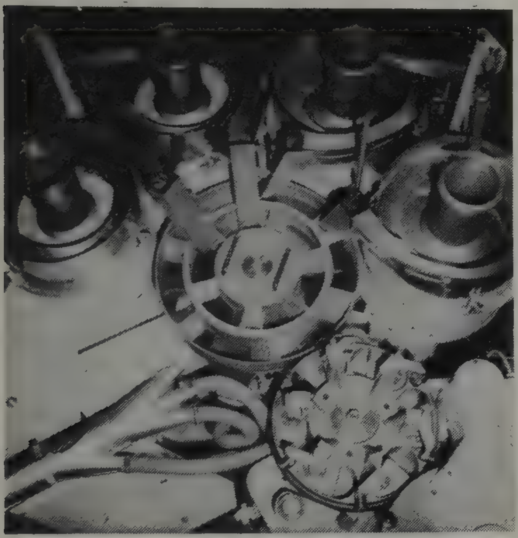
Detail of piston metering unit's plunger with cam control.

With such adjustments possible, the machine can be adapted to the filling characteristics of almost any product. Another advantage is that in the chamber moving the product to the filling position, the injector assures that no residue remains. Lumpy ingredients, handled only with difficulty in chamber-metering units, are single or double-passage augur-fed—and measured out (by volume) by switching on/off (time metering). Portions so metered move by small chutes into kidney-shaped recesses in a rotor centered over the rotating table, thence on to the filling station.

For greater product-handling precision and consistency, the rotor-collection chamber widens from top to bottom. This strong design supports the ring of kidney-shaped recesses internally and externally; the ring can be adjusted to the basic machine—

or one to another. Adjustment to the machine is necessary for set-up, but also where volume fluctuates widely from one product to another.

The switching sequence and the duration of the individual switching cycles are adjustable. In this operating sequence, the ingredients are bagged at two successive stations. At the same time, output is increased, and the operator can determine the items (and quantities)—when dealing with lumpy/bulky products—that are poured in.



Closeup of meter's piston filler, auger feed and rotor.

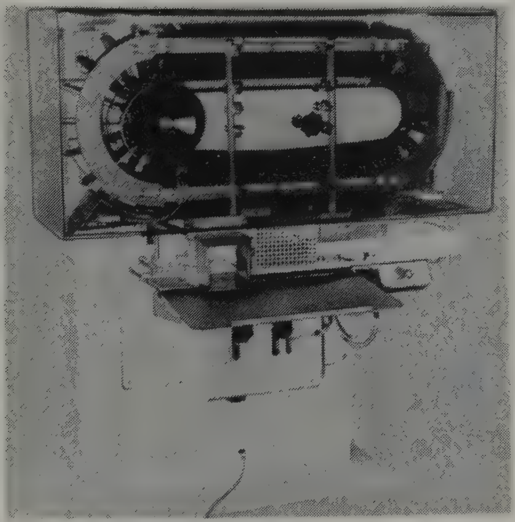
It is necessary only to press the "Check" key to check individual ingredients. When "Check" is pressed, the following sequence is set in motion from a shift register (without interrupting the automatic operation):

Transfer of ingredients to the metering units upstream/downstream is interrupted; the number of interruptions can be pre-selected from 1 to 24. Bag production is not interrupted. After samples have been poured into bags, the filling stations are switched on (pre-determined order), and after an interval that can be preset. The bags to be checked, containing a single ingredient, are subsequently ejected by a sensor detecting bag-thickness, or by a checkweigher connected downstream.

The multi-ingredient packaging machine described here is most compact for its throughput (to 110 bags/minute). The housing over its bag-making area *(see photograph)* is pneumatically-assisted; it can be raised with one hand, and safety switches turn off the machine.

"In today's market, it's desirable to put as many different ingredients as possible in soup mixes—and, of course, to weigh them precisely in the process."

The role of the *continuously-operating vibratory-levelling unit* is an important enhancement. It has been normal practice to flatten flat bags by beating and shaking—or with cylinders and rollers. For many products, such methods are alright. But they can crush ingredients that are large pieces or are delicate. Thus, a vibrating conveyor was designed; it consists of upper and lower belts.

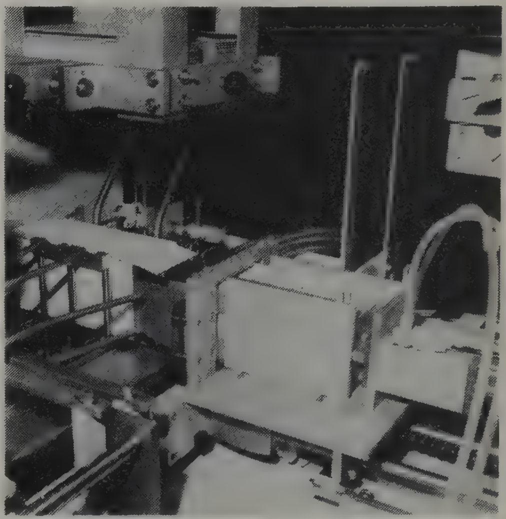


Bag collecting and batching unit (KVT 3).

During the upper run of the lower belt, the several pneumatic vibratory units run at a frequency and amplitude that can be adjusted. When the lower belt vibrates, the upper belt does also, and the product is evenly distributed and levelled in the bag. According to mixture type, the intensity of vibration can be increased at the beginning or end of the run.

A *check weigher* is normally provided to throw out underweight packages after the levelling stage. It also can be used to regulate the metering of certain ingredients. The bags then move on to a bulk-packing machine via rapid conveyor.

With the *bag-collecting and batching unit* (see photograph), separate bags arrive on a belt and enter a compartmented conveyor; each compartment holds 1 to 3 packages (depending on thickness). After collecting the given number of pieces, the conveyor advances one step. When the number of bags for cartoning is reached, they fall into a shaft on the lower run of the conveyor. Bag ejection is assisted as the partitions are opened out by a slight curve in the conveyor.



Detail of bag intake into the box.

Bags standing in the shaft on the narrow side are pushed together to the dimensions of the carton (or slightly less). Crosswise charging is possible; the bags can be fed from any side. Should a fault develop, the bags arriving are automatically rejected, thus the whole plant does

(Continued)

not automatically grind to a halt. The stack of bags is pushed by a cross-slide into a U-shaped frame. This frame swivels through 90° and brings the stacks of bags into position for insertion into cartons.

As for the *boxing machine,* the wide variety of boxes, trays and other packs available does not permit fully-automatic processing of all packages on today's market. In this system, an uncomplicated, cost-effective folding box was selected for bulk-packaging of soup bags. The arrangement yields a simple, neat machine layout (see photograph).

The folding-box storage container lies above the sealing section. Before starting the machine, a folding box is assembled and positioned, so that the stack of bags in readiness can be inserted.

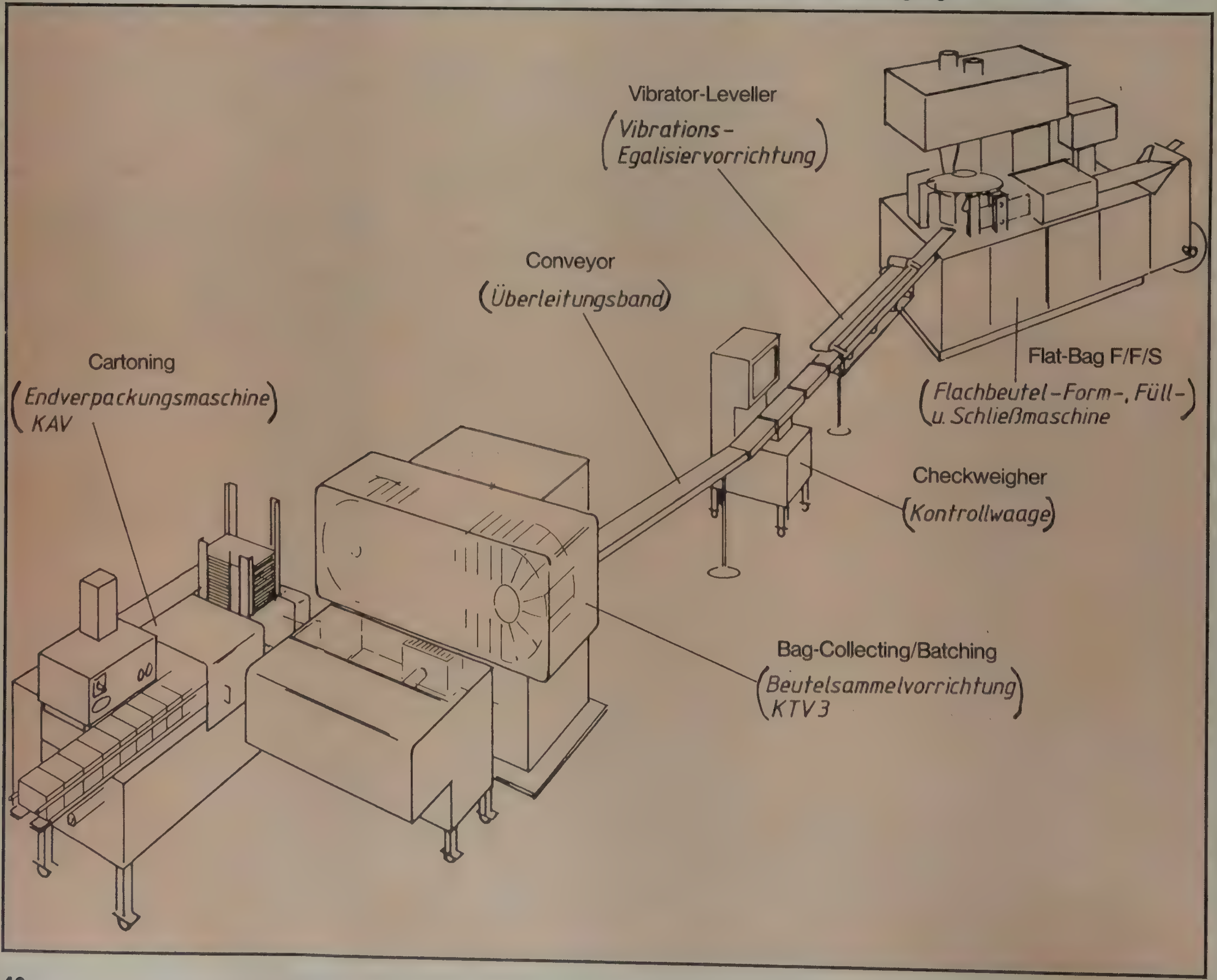
Immediately before the front of the frame filled with bags meets the filling gate, and takes it into the box, the rear wall of the frame moves toward the box and pushes the bags in. Later, the box is pushed in the machine's longitudinal direction, and it is sealed in two operations as the mechanism advances step-by-step. When the cycle's complete, a new box is drawn off and placed in front of the filling gate. It is ready to receive bags.

The machine is adjustable for various bag shapes. Output is determined by the bagging machine's capacity and number of bags to be packed per box.

Only one operator is needed for a properly adjusted machine that is satisfactorily serviced. This, of course, assumes that loading of wrapping foil, ingredients and boxes is done by workers who operate several machines at the same time. ■

> "Only one operator is needed for a properly adjusted machine that is satisfactorily serviced."

Schematic of packing plant, from bag production to packaging.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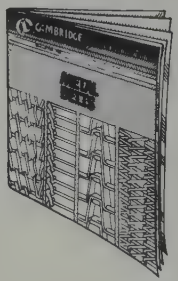

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A CHOICE IN BELTING...
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Case Study: Hydroponically grown vegetables in U.S.

An American innovator has planted its first seeds for growing lettuce hydroponically. It utilizes waste heat and CO_2 from ethanol production in the hydroponic greenhouses. The firm plans to expand significantly its ethanol production.

Archer-Daniels-Midland Co. recently completed a one-acre greenhouse facility at its Decatur, Illinois, U.S., plant complex, where the company will hydroponically grow lettuce, ADM chairman and CEO Dwayne O. Andreas told investment analysts recently.

Hydroponics involves growing plants in a nutrient solution, rather than in soil, under controlled environmental conditions. At ADM's Decatur complex, the greenhouses will be heated by waste heat, and the plants fed with CO_2, from ethanol production.

With the first seeds planted in mid-January, according to ADM Foods Co. president Martin L. Andreas, the lettuce varieties include Bibb, Boston, and "Chinese Cabbage." The Decatur greenhouses will also be used for research into growing other vegetables, as well. ADM plans to hydroponically grow tomatoes, melons and cucumbers, for example, and is also conducting research into hydroponically-grown spinach, cauliflower and broccoli.

Among numbers of such planned facilities, these greenhouses are being used to grow lettuce and other vegetables under hydroponic conditions.

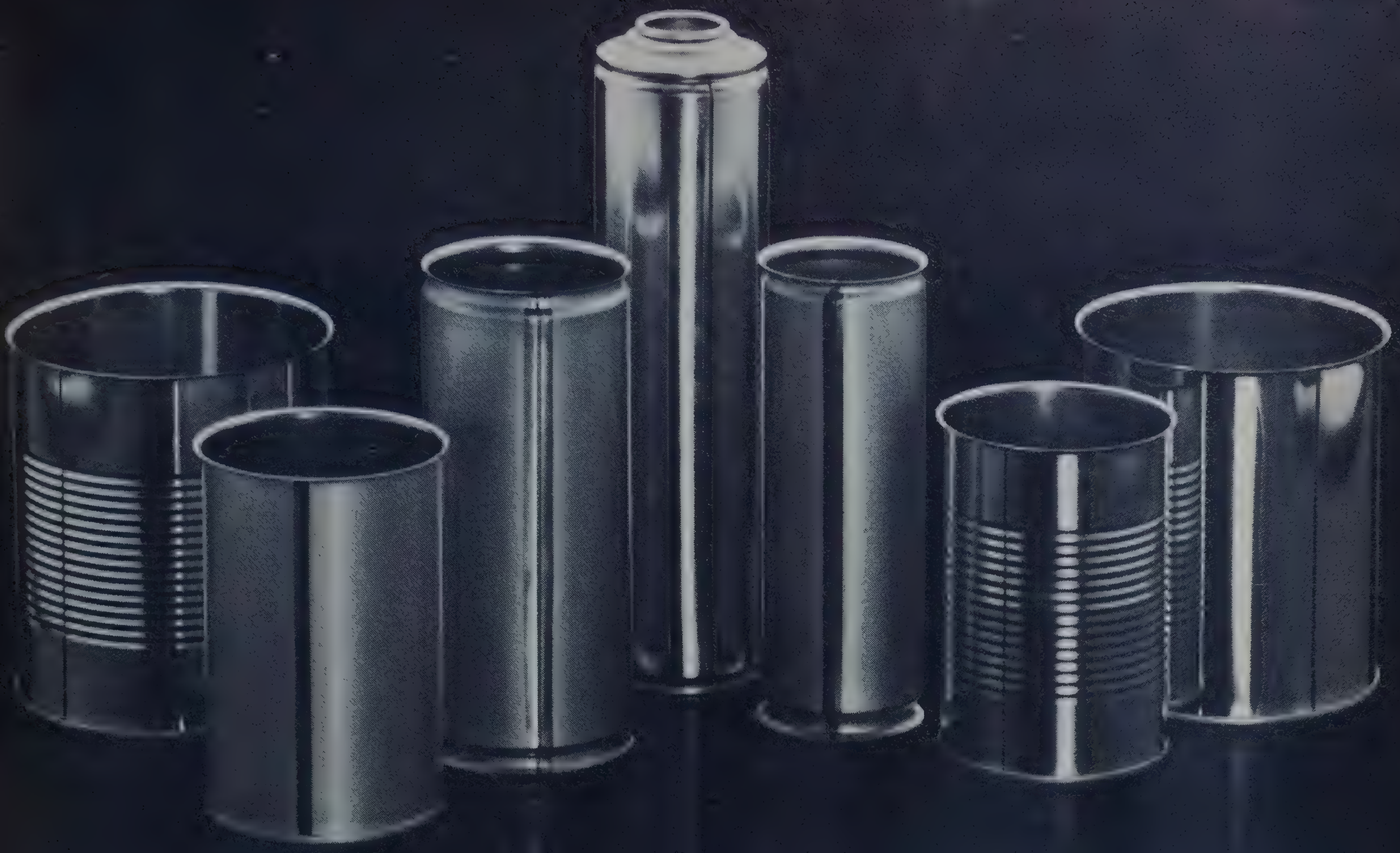
ADM's hydroponic process employs Japanese technology, said Dwayne Andreas, and grows "big, beautiful tomatoes."

In addition to the Decatur site, ADM is surveying other company plant locations where land, waste heat and water are available for hydroponic operations. ADM may have as many as eight more hydroponic plants operating this year, and it is considering three additional sites.

The Decatur hydroponics plant is considered a "commercial-sized research project," added ADM vice-president Richard E. Burket. It will be capable of producing several crops of lettuce per year—perhaps as many as six. With several crops, said Burket, one acre can produce up to 300,000 heads of lettuce per year.

(Continued)

Kurzfassung	Résumé	Sumario
Einzelfallstudie: Hydrophonische Gemüse In den U.S. hat Archer-Daniels-Midland Company begonnen seine ersten Samen für hydrophonisch (in Nährstoff angereichertem Wasser statt in Erde) wachsenden Salat zu pflanzen. Diese ADM-Verfahren benutzt Abwärme und CO_2 von der Äthanol-Erzeugung in seinen hydrophonischen Gewächshäusern. Die Firma plant außerdem eine bedeutende Erweiterung ihrer Äthanolproduktion.	**Etude de cas: des légumes hydroponiques** Aux Etats-Unis, la société Archer-Daniels-Midland a commencé à planter ses premières graines pour la culture hydroponique (dans une eau enrichie d'un produit nutritif, au lieu du sol) de laitue. Ce procédé ADM utilise la chaleur et le gaz carbonique résiduels d'une installation de production d'ethanol dans ses serres hydroponiques. La société compte également accroître de manière significative sa production d'éthanol.	**Caso en estudio: Vegetales hidropónicos** En los E.E.U.U., la compañía Archer-Daniels-Midland ha comenzado a plantar sus primeras semillas para cultivar lechuga hidropónicamente (en agua enriquecida con elementos nutrivos, en vez de suelo). Este proceso ADM utiliza calor de desecho y CO_2 de la producción de etanol en sus invernaderos hidropónicos. La compañía planea también una significativa expansión de su producción de etanol.



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The lettuce grown at the Decatur greenhouses will be marketed via *Eisner* supermarkets (a subsidiary of Jewel Tea Co.) in central Illinois. Burket also sees fast-food operations as constituting a possible market for hydroponic vegetables.

As compared to farm-grown salad vegetables from California, hydroponically grown vegetables can reduce production costs by one-third and slash transportation costs from the West Coast to midwestern markets considerably—while profitably using waste heat and CO_2.

Expands HFCS, ethanol

Dwayne Andreas also announced that ADM will expand production capacities for high-fructose corn syrup (HFCS) and ethanol, which may play a role in the company's future potential for hydroponic greenhouse facilities.

Andreas, incidentally, was recently named as top Chief Executive Officer of the Food Industry by the *Wall Street Transcript*. Among other worthy accomplishments, the *Transcript* quoted one industry observer as saying, "Andreas had the wisdom to see that there are other opportunities in the corn-sweetener area aside from high-fructose corn syrup—namely, the production of ethanol."

Expanded capacity for HFCS became operational at ADM's Decatur and Cedar Rapids, Iowa, plants in April, 1981. These new facilities will boost ADM's HFCS capacity to 1.2 billion pounds (500 million kg) of HFCS 55 and 454 million kg of HFCS 42 per year.

Expanded ethanol production came on-stream at Decatur in March, and the company's new ethanol plant at Cedar Rapids had start-up in April. This will bring ADM's ethanol capacity at Decatur up to 300,000 gallons (1.14 million liters) per day. Start-up capacity at the new Cedar Rapids plant was 125,000 gallons (475,000 liters) per day, with additional capacity projected, depending on marketing conditions.

Close-up view shows some of the construction details of Archer-Daniels-Midland's experimental greenhouses for producing vegetables in nutrient-enriched water.

Additionally, the company alcohol plant in Peoria—temporarily closed for modernization—will reopen before the end of 1981, says Dwayne Andreas. Initial capacity will be 380,000 liters of ethanol per day, working up to an eventual 760,000 liters per day. The Peoria plant also produces industrial alcohol and 190-proof neutral grain spirits for gin and vodka.

Outlook for gasohol

The Reagan Administration policies towards gasohol, as well as pending negotiations with oil companies that ADM hopes to supply, will determine whether or not ADM proceeds with the construction of a proposed 2.3 million liters per day ethanol plant at Des Moines.

The company has acquired a land option for the Des Moines' plant, and is "very optimistic" toward the prospect of building a plant there.

Recent federal and state legislation favors the production of ethanol for gasohol (gasohol is 10% ethanol, 90% gasoline). The U.S. Senate recently passed a tariff of 40¢ per gallon (3.8 liters) on imported alcohol to spur domestic production.

In Illinois, for example, the general assembly over-rode a gubernatorial veto of a tax-exemption for gasohol, and gasohol is now exempt from the 4½¢ per gallon tax on gasoline in Illinois—which works out to a 45¢ per gallon tax exemption on ethanol in Illinois.

Michigan, meanwhile, repealed its tax on gasohol, and Minnesota repealed a tax on Minnesota-made gasohol.

Gasoline prices will probably rise 25-35¢ per gallon this year, Mr. Andreas pointed out, due to crude-oil price hikes by OPEC and deregulation of domestic crude. This should close the price-gap between unleaded premium gasoline and gasohol, making gasohol more attractive to the consumer.

ADM currently sells ethanol for $1.75 per gallon, but with the tax exemptions for gasohol, the ethanol can end up costing the oil companies only 85¢ per gallon, Mr. Andreas added.

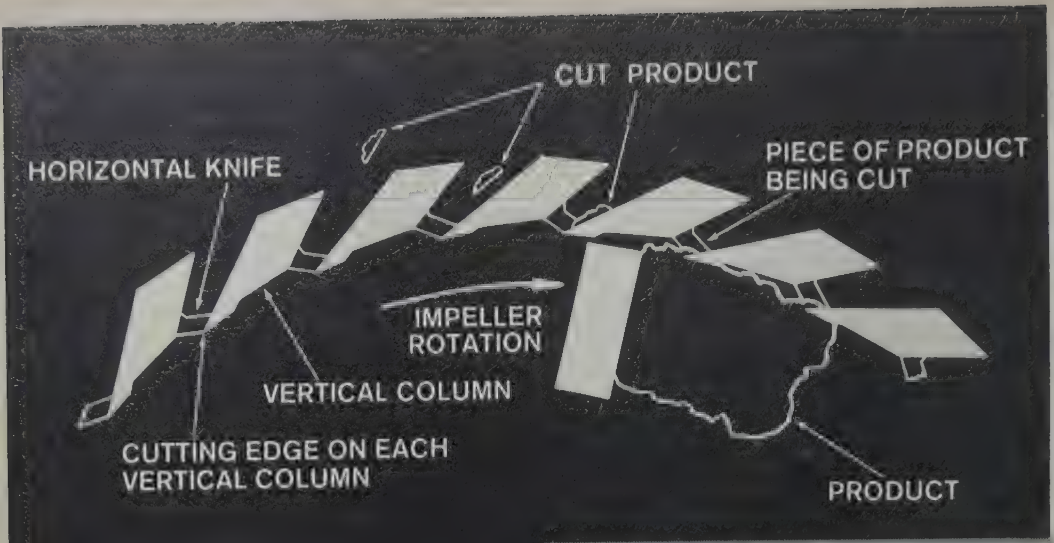
Continuous fermentation

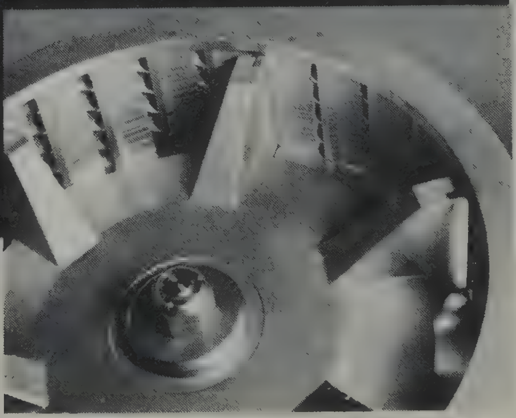
Continuous fermentation of corn starch to make ethanol—a process researched and developed by ADM engineers—has slashed energy costs in the fermentation of ethanol from 70¢ to 12¢ per gallon, Dwayne Andreas reported. ADM is applying this process at its Decatur and Cedar Rapids' plants.

Continuous fermentation requires not only a continuous flow of substrate into the fermenter and continuous withdrawal of product at the same rate, but maintaining the enzyme-producing yeasts continually free from contamination by phage or other micro-organisms during the process.

This, says Richard Burket, is the proprietary key to the ADM process. "This isn't to say we don't lose a vat now and then," Burket adds, "but it is a continuous process."

Although ADM maintains contact with genetic engineering firms doing research into improving raw material grains and improving fermentation enzymes through genetic manipulation, the company is not doing any recombinant DNA research, nor is it sponsoring any such research. Concerning the application of genetic engineering techniques to corn-sweetener or ethanol production, "we see none with commercial significance now," said Dwayne Andreas. ■





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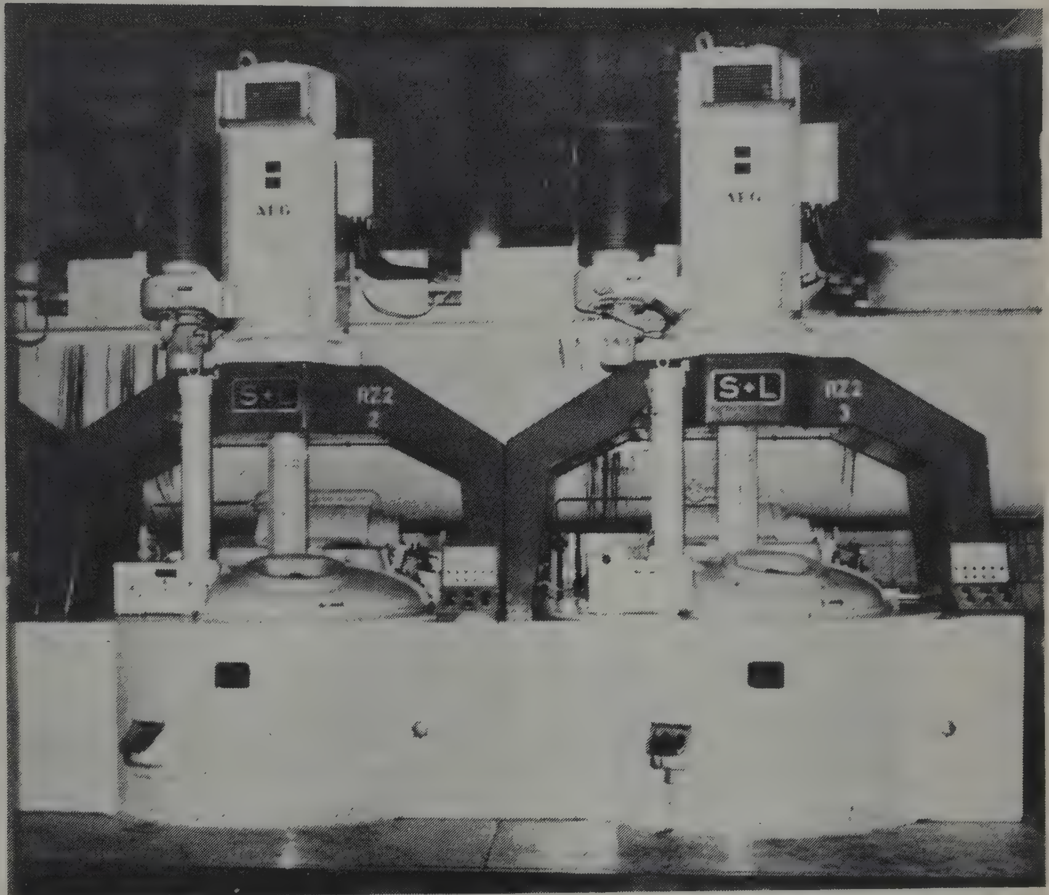
Big production gains for sugar centrifuges

For large centrifuges, AEG Telefunken's dc drives are said to boost output about three charges per hour, per centrifuge, improve sugar quality and slash electricity costs by about one-half.

By James M. Dixon



Batch sugar centrifuges with dc drives are designed for 20 charges/hour.

An eminently practical electronic modernization package for sugar centrifuges has been developed by West Germany's AEG Telefunken. As described and illustrated herein, it has passed the twin tests of practicality and economic soundness.

Telefunken's servo-controlled dc drives, plus a freely-programmable unit, have been shown to increase output by about three charges/hour per centrifuge, while enhancing sugar quality and saving perhaps 50% in the cost of electricity.

Furthermore, with today's large-volume centrifuges loading 1,500 kg or even more per charge, these programmable units make possible improved, more effective sequencing of sugar processing.

And there is a last-but-not-least benefit. Because of this system's built-in longer service life, which means lower maintenance expenditures, its operators are in a strong position to control the costs of labor that are escalating everywhere.

The non-continuous stages of sugar processing, or centrifuging, are run both in sequence and simultaneously. Thus, a flexible-program pattern, coupled with motors that will operate well

Kurzfassung	Résumé	Sumario
Elektronische Modernisierung für Zuckerzentrifugen AEG Telefunken, Westdeutschland, bietet frei programmierbare, kontrollierte DC-Antriebe mit fortschrittlicher, servo-kontrollierter Antriebsausrüstung für Zuckerzentrifugen, die 1.500 kg pro Ansatz (und mehr) laden. Sie soll die Förderung um etwa drei Ansätze/Stunde pro Zentrifuge steigern, die Zuckerqualität verbessern und die Elektrizitätskosten um etwa 50% vermindern.	**Modernisation électronique pour les centrifugeuses à sucre** AEG Telefunken, d'Allemagne Fédérale, offre du matériel d'entrainement électrique à courant continu et à commande asservie programmable pour les centrifugeuses d'une charge de 1.500 kg et plus. Il paraît que cela permettrait d'accroître la production de 3 charges par heure et par centrifugeuse, d'améliorer la qualité du sucre et de réduire la consommation de courant de 50%.	**Modernización electrónica de centrifugadoras de azucar** AEG Telefunken, Alemania Occidental, ofrece mecanismos DC de transmisión libremente programables, controlados, con equipo de transmisión avanzado, servo-controlado, para centrifugadoras de azucar que cargan 1,500 kg por carga (y más). Se dice de ellos que aumentan el rendimiento en aproximadamente tres cargas/hora por centrifugadora, mejoran la calidad del azucar y reducen los costes de electricidad en un 50% aproximadamente.

during a wide range of conditions, determines optimum scheduling of the centrifuging process.

Telefunken's promise is to deliver what it terms an "efficient package of high-powered drives, developed for a variety of applications, and combined with high-reliability drives."

Now, replacing the traditional three-phase, squirrel-cage motors, servo-controlled dc drives provide constant power torque on acceleration and on braking. And, since charges of 20 or more are commonplace, centrifuge motors run only for a short time at full rpm.

Surges eliminated

For the three-phase drive, the demanding process of repeated high acceleration and constant braking requires a motor to perform well with high switch-on and reversal current peaks. The dc drive eliminates such current surges and torque jerks. The acceleration and braking torque is made constant; it is regulated to meet power requirements.

Furthermore, the varying rotational speeds for filling, spinning and emptying process stages are adjustable during operations. By keeping both acceleration and braking torques constant—which naturally means decreased heat loss—power consumption is reduced in the range of 50%, according to Telefunken spokesmen.

The company says that retrofitting existing sugar centrifuges is relatively simple. Fully-laminated motors are available; they are manufactured in large quantities, as standard production items, in power ranges up to hundreds of kilowatts. But, it is emphasized, the drives are only as good as their controls.

Telefunken, quite understandably, is proud of its programmable, electronic control system; its DPW 101 is comprised of digital integrated circuits. Centrifugal control and

Fig. I

Case Study: Changeover to DC technology

The sugar industry has several years' experience of dc drives with freely programmable control. They confirm that the new technology increases productivity—and even quality—of the end product, very considerably. There is evidence of this in the following case, taken as an example.

Lehrter Zucker AG

Before a campaign a large volume centrifugal made by Selwig & Lange and with a filling weight of 1,500 kg per charge was equipped by AEG-Telefunken with dc drive. Area of installation: Crude sugar 2. The shunt-wound dc motor was designed for 20 charges per hour in continuous operation with 60 seconds idle time and 50° C ambient temperature. A separate fan with fine filter gave continuous motor cooling. For rotational speed control and determination a tachogenerator was fitted to the second shaft extension.

Data of the Drive	
Armature voltage	465 V (dc.)
Armature current	600 A
Excitation power	approx. 3 kW
Air inlet temperature	50° C max
Power consumption	1.78 kWh per charge

The field winding of the motor is—particularly with new installations—used as standstill heating outside the campaign in order to avoid damaging effects of the air humidity. In actual service, with 60 seconds idle time, 21 charges per hour were achieved in continuous operation. In this case the drive had at its disposal thermal reserves of 20%.

Comparison with centrifuges of familiar construction, working with pole-change ac motors reveal also, in regard to sugar quality, the following noteworthy differences:

Length of Water Cover	Massecuite Color IE	Sugar Purity	Sugar Color IE
	dc drive		
20s	1876	98.8	181
20s	2208	99.3	106
20s	2109	99.4	94
	ac drive		
20s	2277	89.7	210
20s	2208	99.1	181
20s	2106	99.1	120

Advantages of programmable Control at a Glance

- Safety and reliability due to semiconductor technology that does not rely on contacts
- Unlimited flexibility due to speedy adaptation to the problem through true re-programming
- Quick commissioning and ease of servicing by reason of exchangeable plug-in 'Europa' size printed circuit boards
- Input of process times to the control unit via code switches: time relays dispensed with completely
- Space saving by compact construction
- Editing, storage and signaling of individual fault indications
- Facility to be interfaced with process computer-controlled installations

monitoring are combined in one plug-in printed board.

The DPW 101 meshes the input signals with the output signals. A stored program determines the sequencing of operational steps between the transmitters and contactors, and time relays and the outputs to be controlled. The control system not only monitors both acceleration and deceleration of the machines, it also identifies faulty processing.

By minimizing errors, of course, both startup and shutdown times are significantly reduced. As soon as an error is detected in the system, a light winks on in the control unit. This also causes an automatic de-energizing of the centrifuge.

A good example of the success of Telefunken's system is found at Lehrter Zucker AG, West Germany. At this site, a large Selwig and Lange centrifuge with a filling weight of 1,500 kg per charge was equipped with a shunt-wound motor. The motor has a design capability of 20 charges/hour in continuous operation (though actual production is 21 charges/hour); this includes 60 seconds idle-time in about 50° ambient temperature.

The chart in this article *(Fig. 1)* spells out the noteworthy differences experienced in sugar quality at Lehrter Zucker. The comparison is based on centrifuges of similar construction to the Selwig and Lange, working with pole-change ac drives.

The improved sugar quality was obtained through an optimal layering of crystal heap; the mother liquor was drained to a high degree of perfection through a controlled regulation of rotational speed during the crystallizing/aggregation process. ☐

Article based on information supplied by AEG Telefunken.

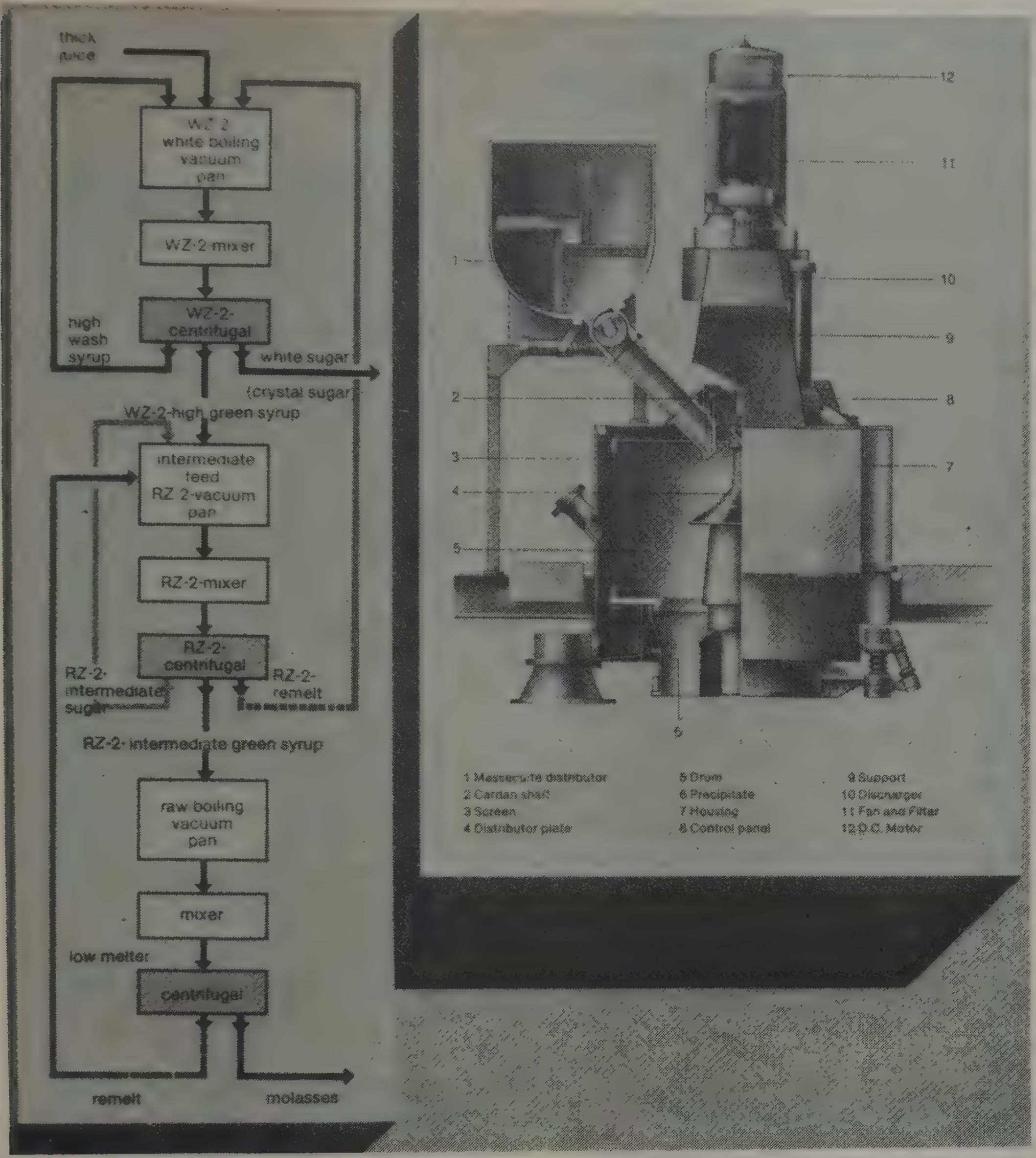
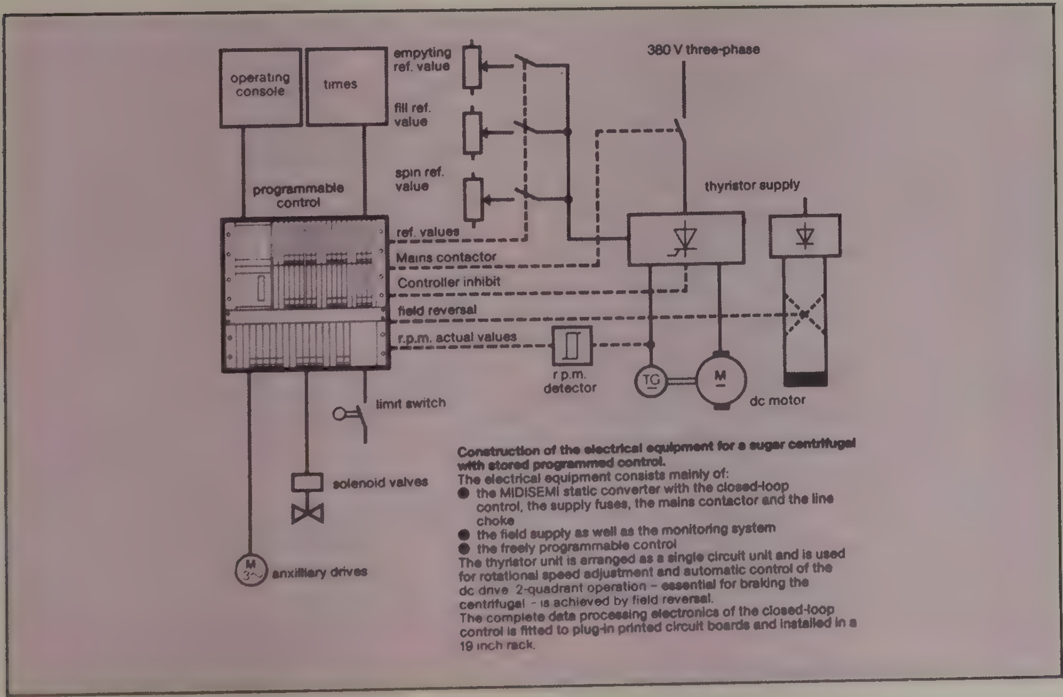


Fig. II: Schematic of AEG Telefunken's system for sugar centrifugals.

The quality improvement is a result of the perfect drainage of the mother liquor, resulting from the optimum stratification, influenced by rotational speed, of the cristallite aggregation.



Construction of the electrical equipment for a sugar centrifugal with stored programmed control.

The electrical equipment consists mainly of:

- the MIDISEMI static converter with the closed-loop control, the supply fuses, the mains contactor and the line choke
- the field supply as well as the monitoring system
- the freely programmable control

The thyristor unit is arranged as a single circuit unit and is used for rotational speed adjustment and automatic control of the dc drive 2-quadrant operation – essential for braking the centrifugal – is achieved by field reversal.

The complete data processing electronics of the closed-loop control is fitted to plug-in printed circuit boards and installed in a 19 inch rack.

Big advantages cited for hot-air aseptic systems

This hot-air system can slash steam costs by perhaps 75%. And it can make possible a new package and packaging system that can replace usage of the popular 1.9-liter metal juice can—with cost savings.

Whether considered from the standpoint of processing, packaging or energy savings, a new hot-air aseptic packaging system for fruit juices and similar acid products, has an impressive list of advantages.

The system was unveiled by the Dole Division of Newport Corporation, and Boise Cascade, at the 1981 IEFP Show.

According to a detailed cost-analysis released by Dole, the hot-air can-sterilizing system—combined with an aseptic, regenerative plate-type or tubular heat-exchanger for sterilizing the product—can slash steam costs by as much as 75% when compared to a rotary retort; by nearly 70% when compared to a Dole Standard 540 retort with scraped-surface heat exchanger; by more than 43% when compared to a Dole Standard 540 with regenerative heat exchanger.

(The Dole Standard 540, installed in about 120 locations around the world, uses superheated steam rather than hot air.)

Further savings can be achieved by using composite, laminated foil/paperboard cans instead of metal cans, says Boise Cascade Co., whose 1.9 liter composite juice cans were used in demonstrating the Dole system at the Show. Cost savings of the composite can versus the steel can range from 10% for the 0.25 liter 202-size, to 20-25% for the 1.9 liter juice can, said Robert M. Miklas, marketing manager for beverage products at Boise Cascade.

"The major marketing opportunity for us is the 1.9 liter juice can," said Miklas. "This size offers the greatest advantage over the metal can. The more metal in the bodywall, the greater the cost advantage."

The composite can could conceivably replace the steel No. 10 can, too, Miklas added. But Boise Cascade is currently aiming at the larger-volume, 1.9 liter retail-size juice can, rather than at the more limited food-service market for acid products in the No. 10 can.

Energy savings

The hot-air system with regenerative heat exchanger uses only 150 Btu's per can for an energy-cost saving of $395.65 per hour,

Kurzfassung	Résumé	Sumario
Große Vorzüge werden für Heißluft-Aseptiksysteme angeführt Ein Vergleich von Energieverbrauch und Kosten der Heißluft-Aseptiksysteme von Dole, gemessen unter gleichen Bedingungen gegenüber vorhandenen aseptischen Einheiten und Retortenverarbeitung, liefern interessante Gegensätze. Tatsächlich belegt Dole in diesem Bericht, daß die Heißlufteinheit mit rückgekoppeltem Wärmeaustauscher fast $ 400.-Ersparnis pro 8-Stundenschicht lieferte — oder mehr als 75% der Energiekosten eines Drehschnellkochers.	**De grands avantages attribués aux systèmes aseptiques à air chaud** Une comparaison de la consommation d'énergie et des coûts des systèms aseptiques à air chaud Dole avec les appareils et cornues aseptiques existants donne des résultats intéressants. Ce rapport de Dole prouve, en effet, que l'unité à air chaud à échangeur de chaleur régénérateur a permis des économies de presque 400 dollars par période de travail de 8 heures — soit 75% du coût de l'énergie nécessaire pour une marmite à pression rotative.	**Grandes ventajes citadas para sistemas asépticos de aire caliente** Una comparación del consumo de energía y costes de los sistemas asépticos Dole de aire caliente, medidos en los mismos términos frente a unidades asépticas en existencia y procesos con retortas, proporciona interesantes contrastes. De hecho, documenta Dole en este informe, la unidad de aire caliente con cambiador de calor regenerativo proporciona economías de casi $400 por turno de 8 horas — o más del 75% del coste de energía de una autoclave rotatoria.

as compared with a rotary retort. (The can sterilizer itself consumes only 25 Btu's per can; product sterilization takes 125 Btu's per can volume.

Cost comparisons are based on:

—Canning speed of 333 No. 303-size cans per minute;

—Product throughput of 843 kg. per hour of 3.6 kg per 3.8 liter product;

—100% line efficiency;

—Initial product temperature of 21°C raised to 136°C in a scraped-surface heat exchanger (94°C in a plate-type heat exchanger), and cooled.

—Ambient air temperature of 21°C raised in the can sterilizer to 316°C (same as super-heated steam) at 80% heat efficiency and 20% allowance for make-up air;

—Utility costs which were current in California in June, 1980.

For packers who make their own metal cans and use hot-fill vacuum systems, Dole points out that the hot-air aseptic system eliminates (or greatly reduces) the need for vacuum, thus allowing use of lighter-gauge metal cans. Can-gauge can be reduced from 43 kg (base box weight) to 32 kg. This means metal savings of 1½ to 2½ cents per can, depending upon can size.

The composite can, however, can reportedly reduce 1.9 liter juice-can costs by 5 cents per can. (Boise Cascade points out that this figure is reasonable for the merchant can market—i.e., canners who purchase cans rather than make their own, but savings will vary among canners who make their own cans.)

The aseptic system

With an aseptic system, the sterilization of the food itself is performed by one of several basic types of heat exchangers. Basically, the product is sterilized in a thin film or small mass by applying ultra-high temperatures, and the product temperature is then reduced to the desired point by flashing in a vacuum chamber or cooling chamber, or cooled indirectly in a heat exchanger using cool water.

The cold sterile product is then conveyed in a closed, bacteria-free system to the aseptic canning equipment.

Basically, four separate components make up the aseptic system: (1) the container sterilizing unit; (2) the filling section; (3) the cover sterilizing unit; and, (4) the container closing section. A general idea of the set-up is seen in the diagram. Not shown, however, is the plate-type or tubular heat-exchanger for sterilizing the product.

This equipment, says Dole Vice-President Robert W. Meyers, can be supplied by any manufacturer of such equipment (i.e., Cherry-Burrell, Crepaco, Alfa Laval, Votator, FranRica, etc.).

Linking and coordinating the functions of the various aseptic units is an integrated network of instrumentation, controls and alarms, which permit the process to perform properly at high speed. It is imperative from a bacteriological standpoint that accurate temperature readings are maintained at critical points in the process. Thermocouples in these critical areas transmit continuous temperature readings, which are detailed on a strip chart recorder to become a permanent record of the operation.

Visual temperature devices are also included as a support system. Should the temperature in any part of the system fall below a pre-determined critical level, both visual and audible alarms are activated. If corrective action is not taken by the operator, the equipment can be automatically shut down, and the containers, covers and product automatically by-passed. The equipment remains inoperable until proper corrective action has been taken.

The can sterilizing unit

The container sterilizing unit is an enclosed hot-air chamber. It contains a spiral conveyor that moves the cans through the unit while hot air is directed around and into the containers. In approximately 45 seconds of pas-

(Continued on page 61)

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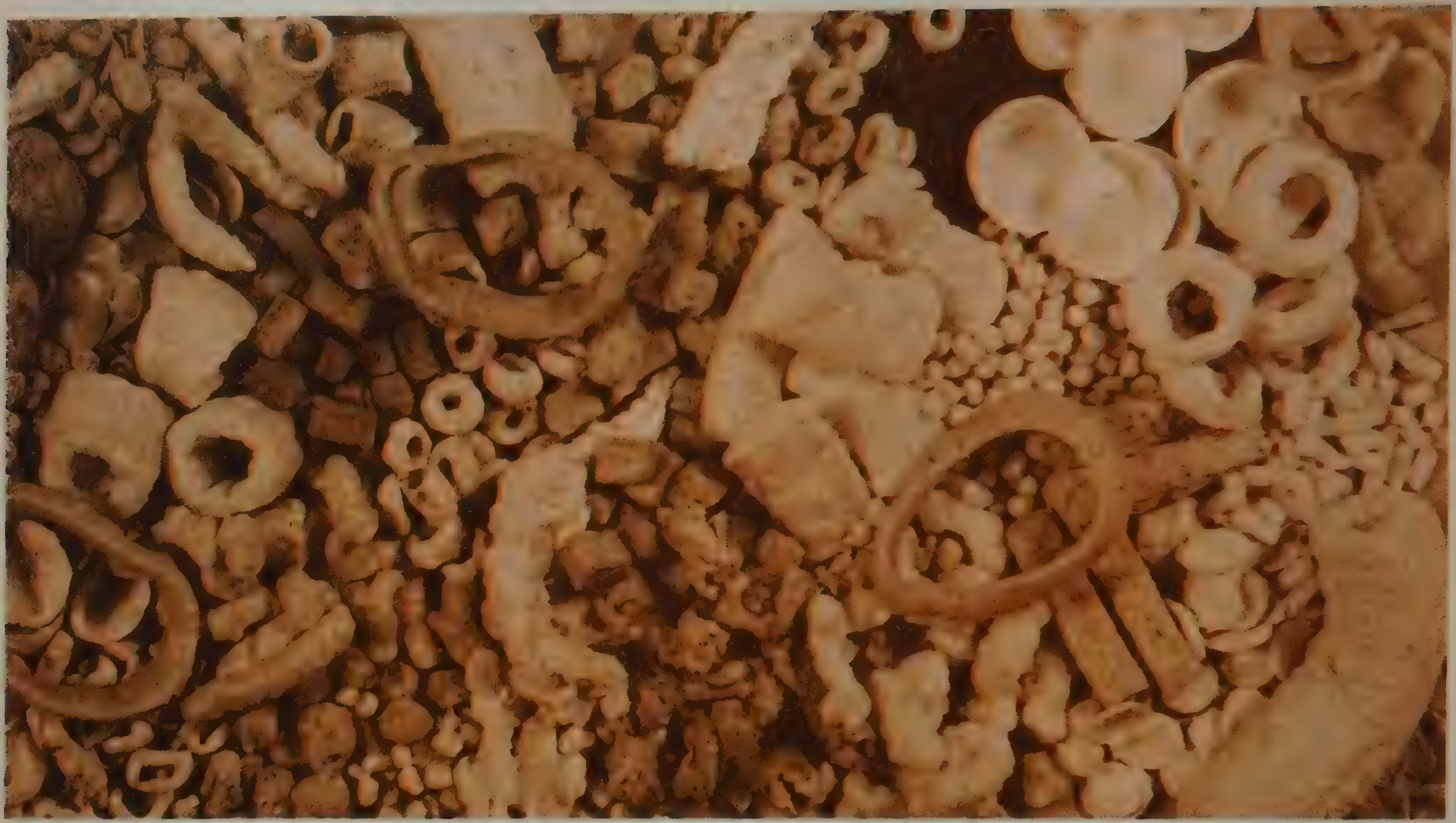
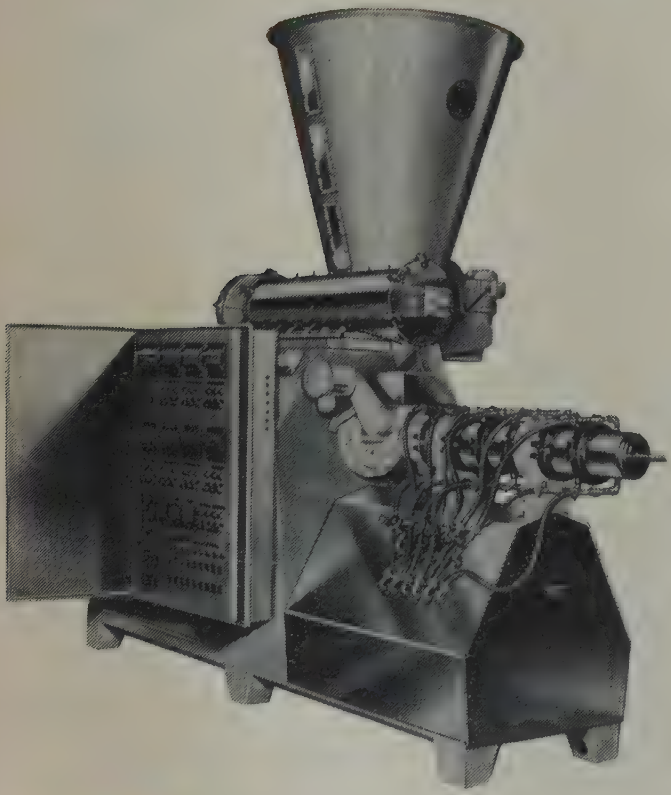
La extrusora WENGER





Alimentos para servir en bares (con enriquecimiento proteínico o sin él), empanadas, cereales enriquecidos con proteínas, proteínas de hortalizas texturadas para extensores cárnicos y similares, productos de pasta, alimentos para niños de pecho, y tantos otros productos nuevos, con sus elementos.

No hay más límite que la imaginación del usuario. Wenger fabrica instalaciones completas de cocción por extrusión, de 25 a 250 cv., con capacidad para producir cualquiera o todos los alimentos indicados a un ritmo que va de 90 kg/h a bastante más de 4000 kg/h.

Si desea información sobre los sistemas de cocción por extrusión de más amplio uso, diríjase a:

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Wenger International - *Subsidiary Office,* Franklin Rooseveltplaats N. 12, Antwerpen, Belgium; tel. (31) 327005, telex 31413

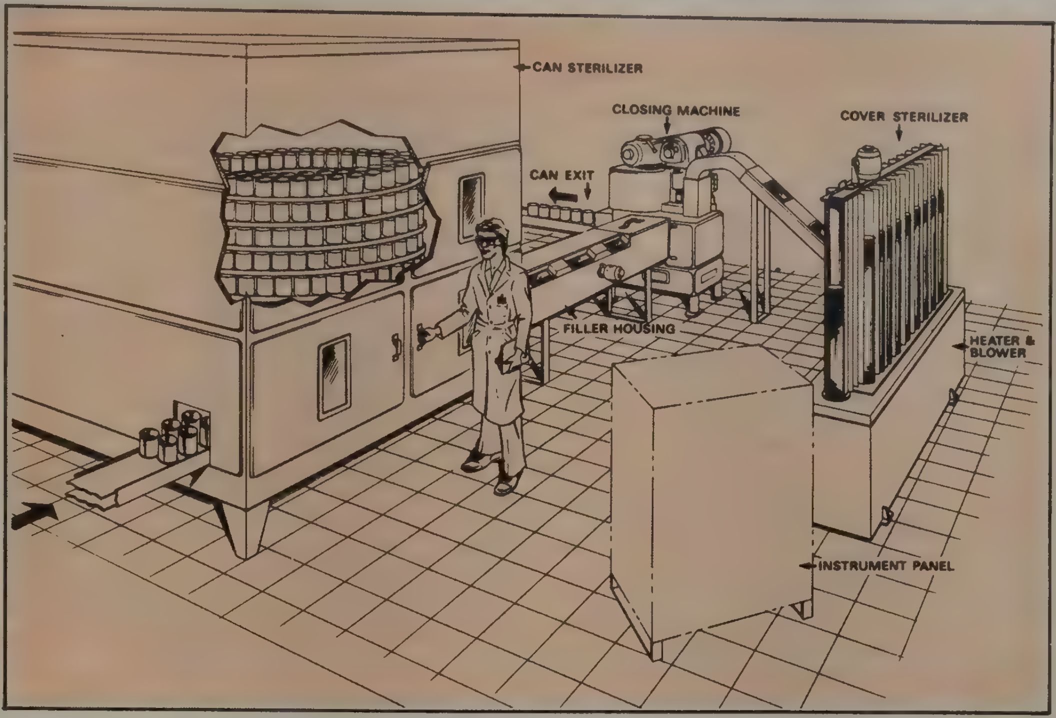
sage, the temperature of the containers reaches 116° C, which is the temperature point required for the destruction of bacteria when acid foods, such as fruit juices, are used.

These container temperatures are a departure from the conventional aseptic can sterilizer used with metal cans for low-acid foods. In those cases, superheated steam at temperatures around 288° C is used to sterilize the cans. The temperature of the can itself reaches 221-226° C.

The filling section

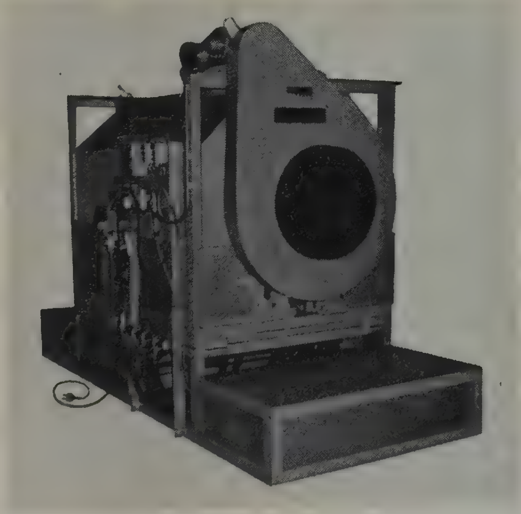
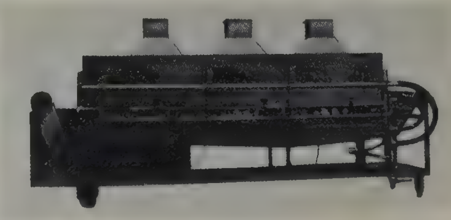
The hot, sterile containers move into the filling section where precooked product is introduced into the containers by one of several specially-designed filling mechanisms.

Filling speed for the 1.9 liter cans of juice is around 300 cans per minute. For smaller-size cans, speeds of 500 per minute are feasible, says Harry Watters, president of Dole.



Cans enter the sterilizer (left) and are exposed to hot-air sterilization. Then, they are discharged into a straight-line aseptic filler, followed by the closing machine—which is a standard unit modified for aseptic operation

The major difference between the filling system used for low-acid products in metal cans, and the system used for high-acid products in composite cans, relates to temperature. With low-acid foods, as the hot sterile containers move into the filling sec-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Phone: Tokyo 03—843—1521

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Circle 45 on Inquiry Card

tion, jets of cold sterile water are directed against the lower portion of the containers.

This markedly reduces the container temperature prior to filling. The cold-water jets are not needed with acid foods because the temperature of the cans entering the filling system is much lower.

The cover sterilizing unit

The third basic component of the aseptic canning system—the cover sterilizing unit—is arranged as part of the closing machine. Covers are fed in stacks into the unit through one of several mechanical devices, and are completely enveloped in hot air for approximately 75 to 90 seconds until they are sterile. Then, they are conveyed into the closing machine.

Container closing section

The fourth and last component of the system, the closing machine, is usually a standard machine modified to operate in an aseptic canning system. To accommodate the sterile containers filled with cold sterile product, and the seaming of the pre-sterilized containers, the closing machine is completely shrouded.

This shrouding permits initial sterilizing of the equipment and maintains a completely sterile atmosphere in the area where the sterile container, cover and product are exposed.

From the above descriptions, it can be seen that the aseptic system for composite cans is very similar to the aseptic system for metal cans. The big difference is that composite cans are used only for high-acid foods, therefore hot-air can be used as the sterilizing agent. With low-acid foods in metal containers, superheated steam is used.

According to a report prepared by Dole: "Experience has shown that hot air and superheated steam differ little, if any, in lethality. The published data vary enough from researcher to researcher so that it is safe for the purposes of this report to assume no difference between the two. The following assumptions have been made . . .

"1. The hot air flow to the Dole filling section, cover sterilizer and seamer housing will equal the present superheated steam flow and will be 100% make-up. Air temperatures will be the same as steam temperatures.

"2. The hot air flow to the Dole can sterilizing unit will also equal the present flow of superheated steam and will be recirculated with a 20% allowance for make-up." ■

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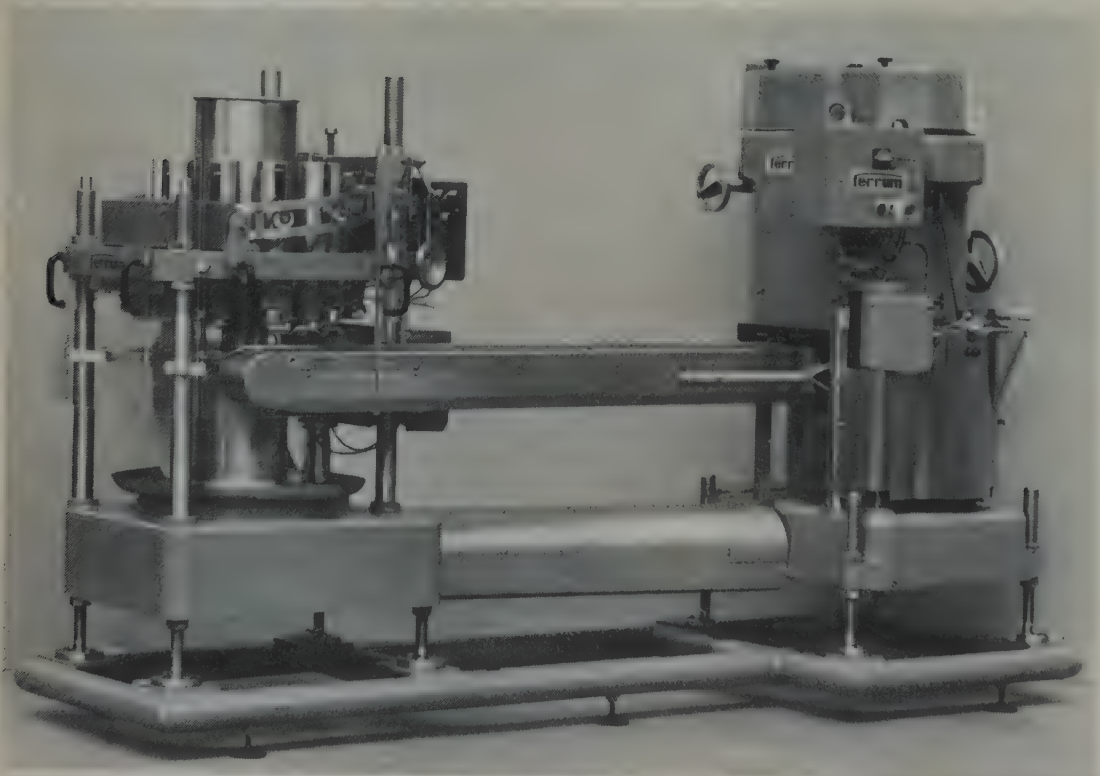

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GDR—For Worldwide Trade and Technical Progress

Fortschritt Landmaschinen Export-Import

NAGEMA—an innovative manufacturer of efficient food processing and packaging machinery

In many countries, the name NAGEMA has become the synonym for "producers of highly efficient machinery for the food and packaging industries." In the German Democratic Republic, the combine NAGEMA is the *only* manufacturer in this field. Its range of products includes:

—Packaging machines.
—Machinery for cacao and chocolate processing.
—Beverage bottling equipment.
—Large-scale kitchen equipment.
—Slaughterhouse equipment and meat-processing machines.
—Weighing devices.

On the basis of continuous market research, and a high level of science and technology, NAGEMA is in a position to adapt itself in a short time to the changes in the international market and to meet the customers' requirements.

To this end, the combine closely cooperates with scientific institutes. Among its partners are such institutions as the Technical University of Dresden and the Technical College of Ilmenau.

This cooperation contributes to an awareness of international trends, even more fully than in the past, and helps respond accordingly. This ensures the customer that NAGEMA machines, at the time of their introduction, are fully in line with the world standards. Buyers of NAGEMA machines profit also from the fact that the expertise of the scientific institutions mentioned—with regard to the most up-to-date measuring and control techniques and equipment—is utilized in the development of these machines.

The roll-type pulverizing machine made by VEB Kombinat NAGEMA was awarded a Leipzig Fair Gold Medal.

In close cooperation with those scientific institutions, the machines are exhaustively tested before they are introduced into series production. Only those machines so introduced have stood the hardest tests of industrial trial, and have proved to have reached a high scientific-technological level.

In addition to customers' needs, such objectives as saving material, energy consumption and labour, ease of operation and a well-balanced price-performance ratio are decisive to whether a NAGEMA product proves fit for being manufactured in series.

Based on these requirements, useful contacts have already been established with, among other firms, the Weldotron Corporation of Piscataway, New Jersey, in the USA. In cooperation with this enterprise, for example, 160 machines of the Filutex type were sold on the American market. Also, there are good relations with the National Equipment firm in New York.

Supported by the positive market results achieved (in particular, in the sale of packing machines for sweets, in which the enterprise Verpackungsmaschinenbau Dresden meets with world-wide approval), the specialized production process of the combine is increasingly determined by two product lines.

There are, on the one hand, the well-known single-purpose machines, manufactured for high production rates; and, on the other hand, the multi-purpose wrapping machines—including heavy-duty machinery.

The strategy for the development of these two kinds of machines is closely linked with the requirements of the market. In this connection, it cannot be ignored that the trend continues to be determined by the production of complete, integrated lines and installations. On an ever-increasing scale, NAGEMA is able to supply its customers with comprehensive solutions for problems in streamlining their manufacturing processes.

This task is carried out by NAGEMA in cooperation with a combine-owned enterprise for industrial plant construction. It is responsible for the designing, supply and start-up operations of slaughter-houses and meat-processing factories, large-scale kitchens and complete beverage factories.

To be able to meet such international requirements in the future, the following principles are paramount in the activities of the NAGEMA combine:

—Widening the assortment of machinery and equipment.
—Supply of special-purpose machines.
—Supply of complete installations.
—Construction of basic machine types, capable of being expanded by add-on assemblies for specific applications.
—Manufacture of products featuring a high technological level for a wider range of applications.
—Steady saving of energy consumption and materials.
—Lower demand for operating personnel.
—Ease of operation.
—Well-balanced price-performance ratio.

To translate these principles into profit for the buyers of NAGEMA products, scientists, technicians and designers from the combine have developed new techniques and operating methods for the food processing and packaging industries. These are introduced to the readers of "Food Engineering International" on the following pages.

Combine NAGEMA—Facts and Figures

The Combine NAGEMA comprises 31 enterprises, which manufacture and supply six basic product groups.

The combine exports its products, through the foreign-trade enterprise Fortschritt Landmaschinen Export-Import, to more than 70 countries around the world.

More than 40 products made by NAGEMA were awarded the Gold Medals of the Leipzig Fair and other international fairs and exhibitions.

Sixty-one products of the NAGEMA combine bear the quality label "Q"—the *GDR's highest certification mark.*

At present, 93% of the commodities with this quality label, which are subject to on-going quality tests, are manufactured by VED Verpackungsmaschinenbau, which is the principal enterprise of VEB Kombinat NAGEMA.

To promote faster introduction of top-quality, advanced products after production, and to ensure the highest scientific-technological level of the equipment, a comprehensive contract was concluded in 1979 between the Technical University of Dresden and VEB Kombinat NAGEMA.

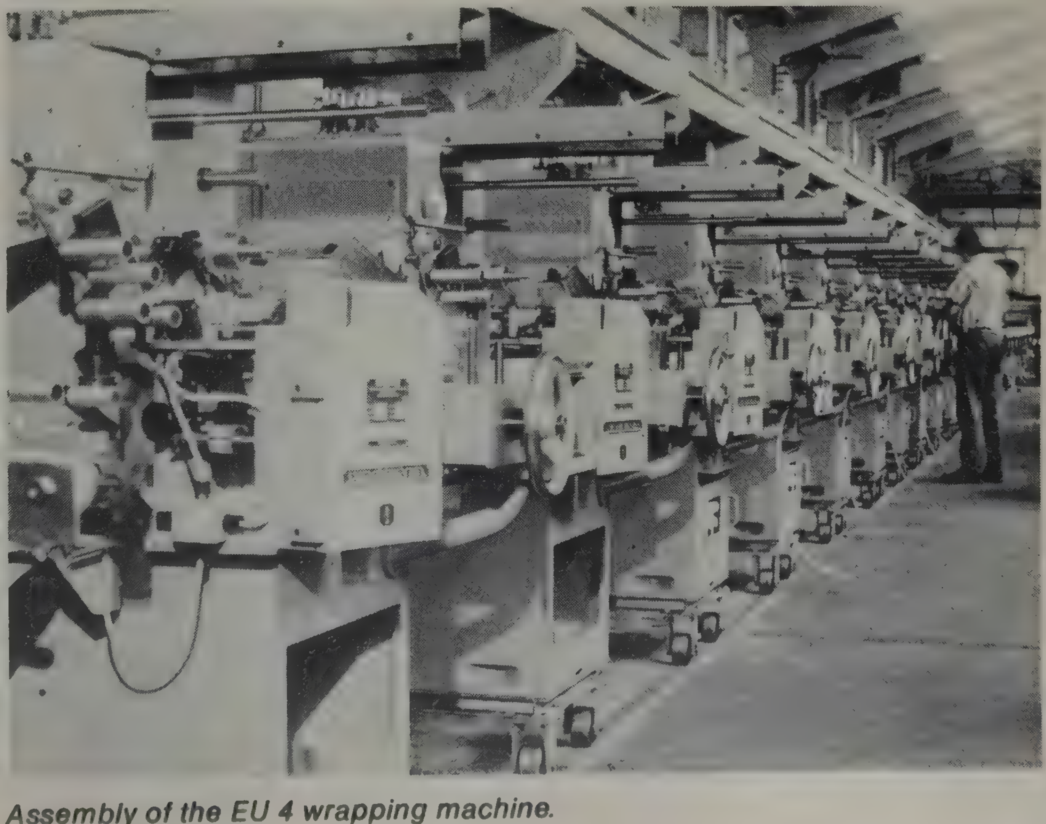
NAGEMA packaging machinery

Packaging machines made by VEB Verpackungsmaschinenbau Dresden are prized among the valued equipment of numerous manufacturers in more than 60 countries on five continents.

The most important production capability of this enterprise is the manufacture of wrapping machines and packaging lines for the sweets' industry. More than 6,500 wrapping machines of the standard series EU have been produced so far. Some of these are operating in confectionery industry of the USA to the fullest satisfaction of their users.

Some 850 wrapping machines for hard sweets and confectionery are produced in Dresden every year. The range of wrapping machines made by these manufacturers extends from special single-purpose machines and universally-applicable wrapping machines to heavy-duty machines.

(Continued on page 66)



Assembly of the EU 4 wrapping machine.

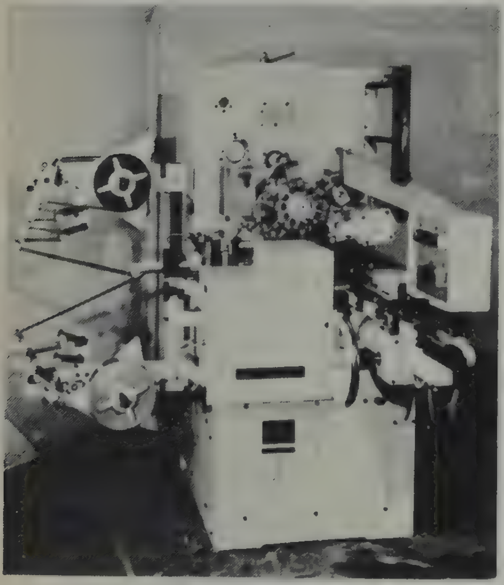
Nagema Machinery . . .

Wrapping machines for confectionery

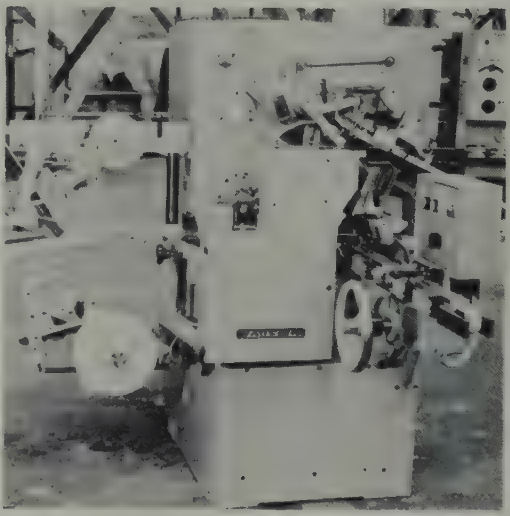
In the interest of the packaging industry, these machines are being steadily improved, reaching for perfection by utilizing the latest innovations in the fields of science and technology. Because of the high degree of standardization, and employing the most modern manufacturing techniques, today's special-purpose machines are also provided with the advantages of perfected standard machines.

The range of application of these wrapping machines for hard sweets comprises the wrapping of cast and stamped goods such as ovalettes, drops, bars, square and rectangular shapes, as well as solid or filled-up shapes with a filling portion of about 30%.

Printed waxed paper, cellophane or polypropylene foil can be processed from the reel as packaging material for the outer wrappings of all types, while pergamyne, waxed paper and laminated aluminium foil may be used for inner wrappings. These wrapping machines for confectionery are based on the same standard designs as the wrapping machines for hard sweets. The most essential difference is in the feed variations of pieces to be packaged.



Wrapping machine type EL 11.



Wrapping machine type EL 5.

The wrapping machines for confectionery, types EU 7, EL 5, and EL 11, are used for packaging confectionery pieces, chocolate creams and sweetmeats (solid or with solid filling, with or without chocolate coatings). In the case of the EU 7 and EL 11 types, the confectionary units may be of rectangular or oval shapes. For the EL 5 model, the shapes must be rectangular.

For the feed mechanization of all three models, the MG 1 feed equipment is available to sort the confectionary pieces incoming in an unarranged order, and then supplies them to the wrapping machine.

The model EU 7 machine surrounds the confectionary pieces in a double-faced twisted wrapping. It has an output of from 180 to 350 packages per minute, while the EL 5 type is used for wrapping confectionery in taper-folded wraps. The EL 5 has an output of between 150 and 300 packages per minute.

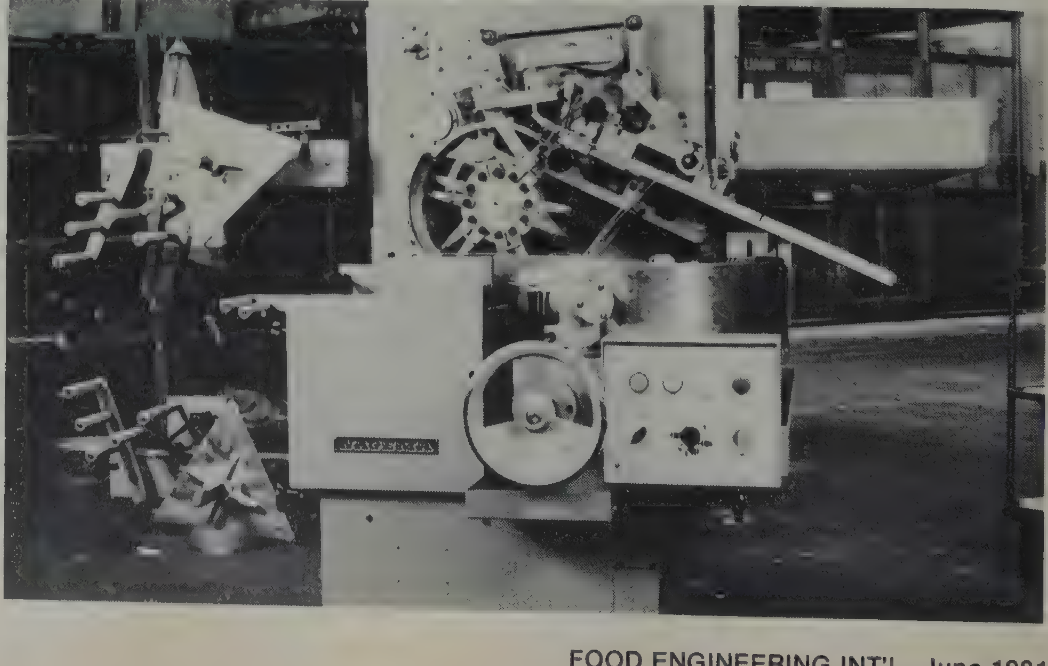
If the confectionery is to be packed in little bag wrappings, the EL 11 an output range of between 160 and 300 packages per minute.

In the case of intermittently-printed packing materials, the machines can be equipped with a photoelectric printing, centering device.

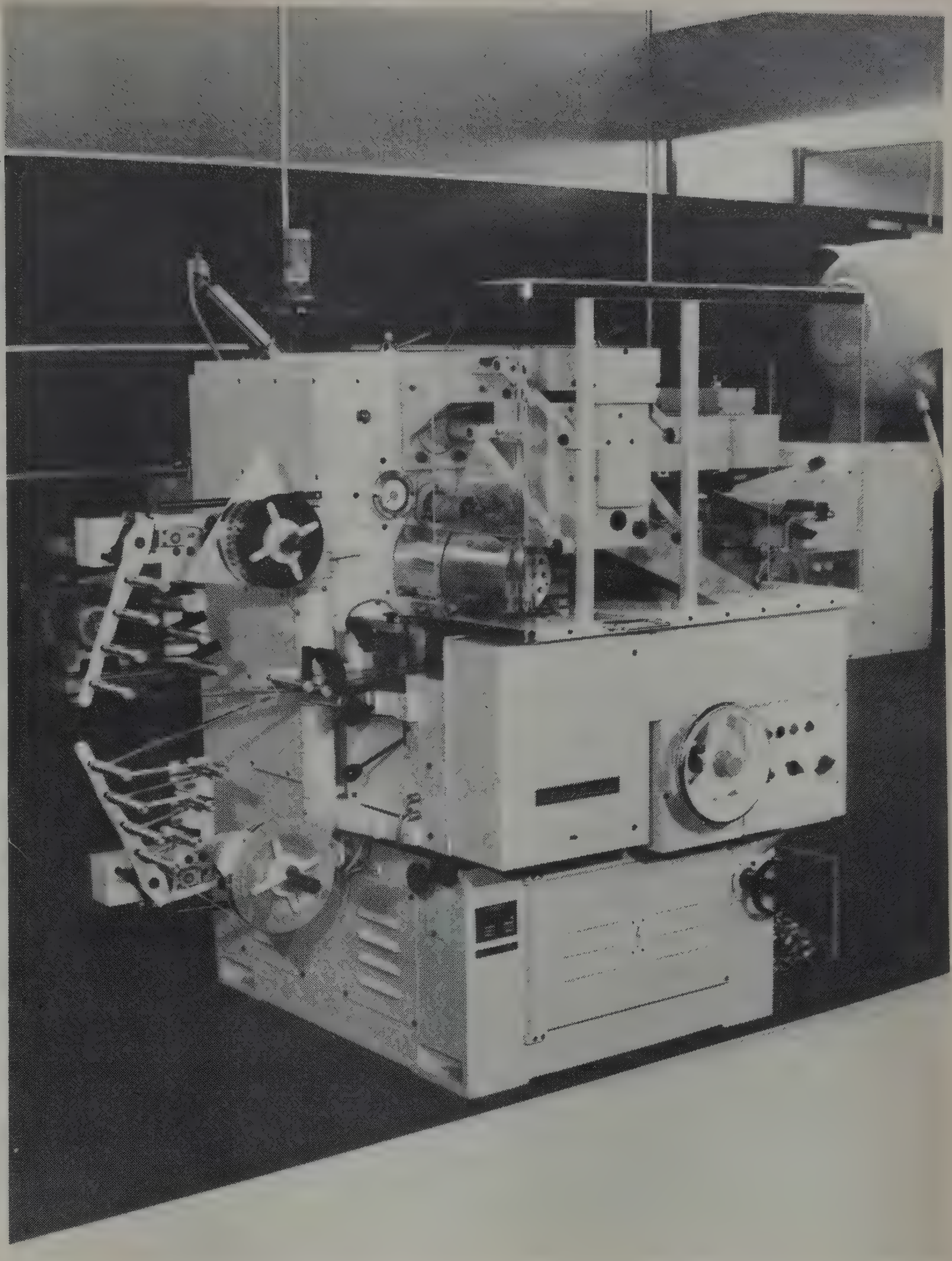
Wrapping machines for hard sweets

The *Model EU 4 wrapping machine* is an extension of the type EU 3 machines, which have an exceptional reputation in the market—more than 5,000 units have been delivered so far. This further technological development ensures higher efficiency, in the output range of from 430 to 500 packages per minute. This means, as proved in many specific cases, a capacity increase of up to 40%. The kind of wrapping used in the EU 4 is double-faced twisted wrapping.

The *type EL 8 wrapping machine,* the most efficient wrapping machine for hard sweets, achieves a perform-



Wrapping machine type EL 3.



Wrapping machine for hard sweets, type EL 8. ▶

ance of up to 650 working cycles per minute. It is also equipped for double-faced twisted wrappings. In 1979, this machine was awarded a gold medal at the Leipzig Spring Fair. As with the other models, the EL 8 is equipped with a sorting device for separation of splinters, fine particles or hard sweets with major dimensional variations.

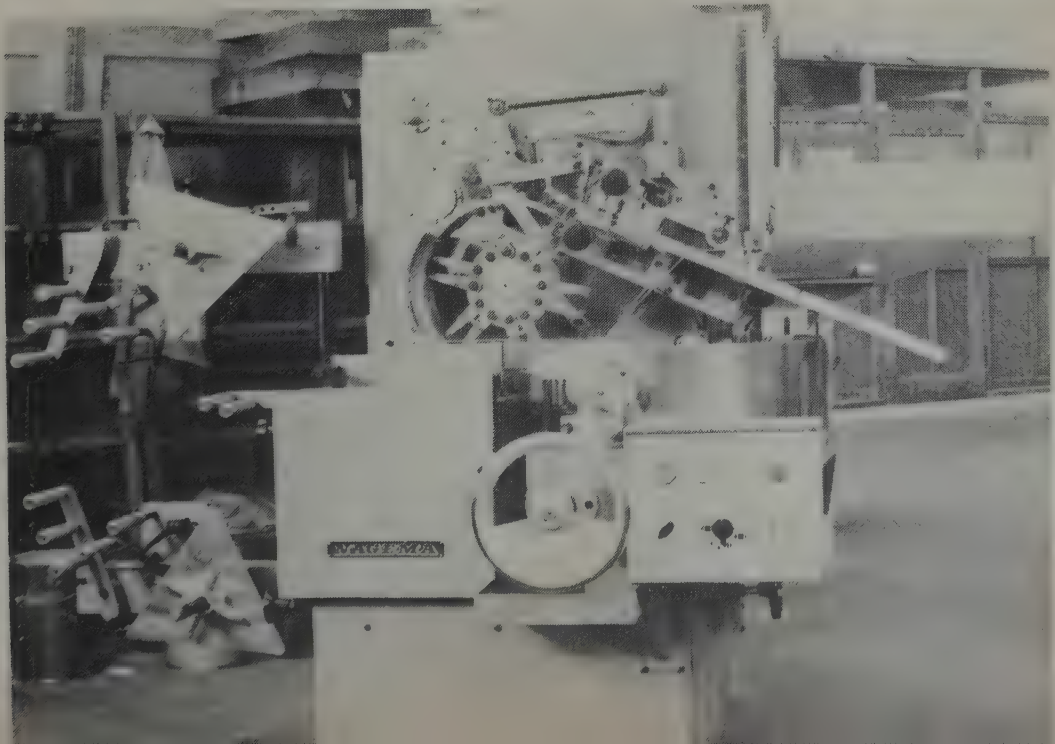
The *type EL 2 wrapping machine* is also a single-purpose machine, but is designed for taper-folded wrappings. The EL 2 has a capacity of up to 400 packages per minute.

The *type EL 3* is designed for five different kinds of folding. These can be switched by means of interchangeable modular units. If the machine is reset for a different kind of folding, no modification of the basic machine is required. The following outputs per minute are attained for the various kinds of wrapping:

Twisted wrapping	up to 500 packs/min.
Little-bag wrapping	up to 400 packs/min.
Little-basket wrapping	up to 300 packs/min.
Taper-folded wrapping	up to 400 packs/min.
Flat-sealing wrapping	up to 350 packs/min.

On request, both the EL 2 and the EL 3 type can be equipped with a photoelectric-printing mark control. Like all the other Nagema wrapping machines, these two machines also bear the quality label "Q".

(Continued)



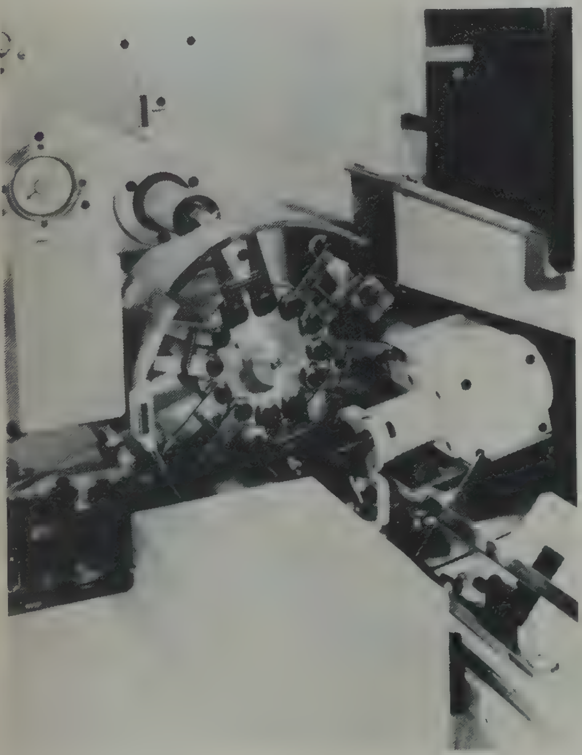
◀ *Wrapping machine type EL 2.*

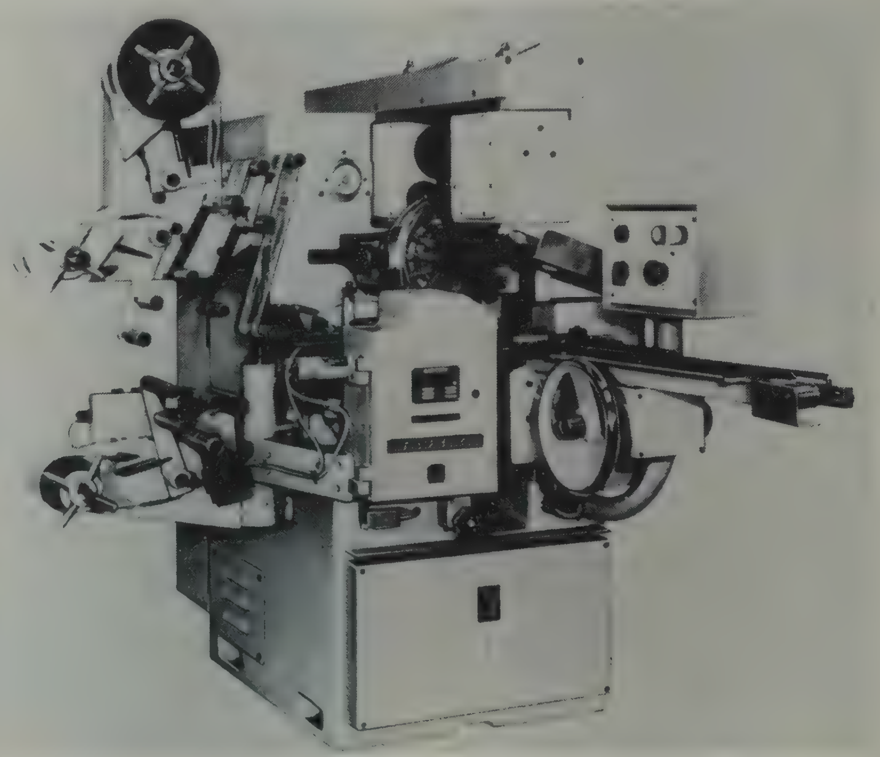
Wrapping Machines from

NAGEMA®

From our comprehensive programme we present:

EL 11 and EU 7—Machines for wrapping up pieces of confectionery, pralines or candy with a hard or soft core





EL 11
Type of wrapping:
Wrapped up in the form of a small bag, with protective strip inserted

Output:
160 . . . 300 cycles per minute infinitely variable

EU 7
Type of wrapping:
Wrapper with the two ends twisted, consisting of one outer and two inner wrappings max.

Output:
180 . . . 380 cycles per minute infinitely variable

EW 8
Wrapping machine for chewing gum and similar stuffs

Type of wrapping:
Folded lengthwise, with a picture inserted in the case of chewing gum

Output:
500 . . . 750 wrappings per minute

More detailed information available on request.

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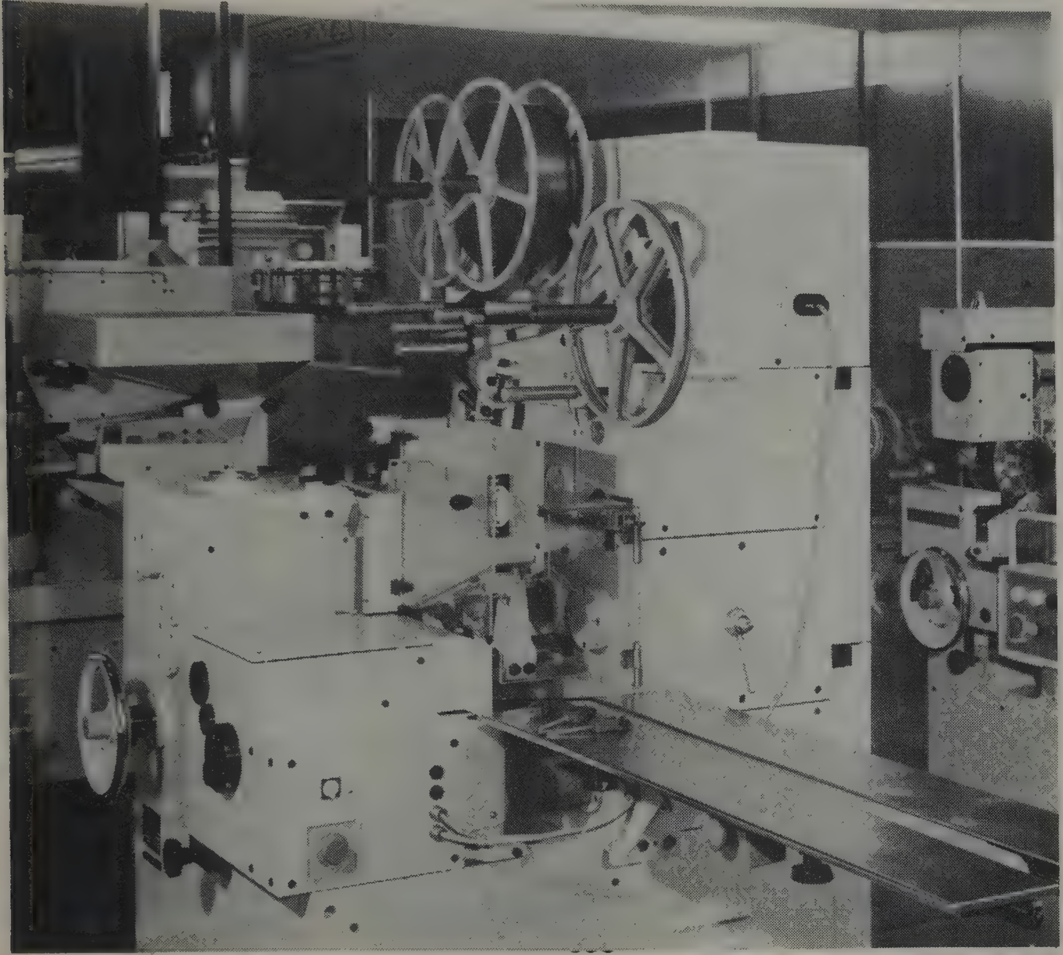
Wrapping machines for soft sweets



Wrapping machine for soft sweets with stick, type EW 7.

Wrapping machines for soft sweets (of the standard series EW) process product for both soft sweets and chewing-gum from the bar. In this EW machine, the individual toffee is separated from the bar, shaped and wrapped. With the EW 5 type, it is possible to wrap single packages in twisted and folded wrappings, with up to 800 packages per minute (in twisted wrapping) and 750 packages per minute, in the case of folded wrapping.

Waxed paper and cellophane, capable of being sealed, or laminated aluminium foil, processed from the reel, are used as packaging material.

The EW 7 type is suited for packaging soft sweets with sticks, with an end-folding applied to the stick end and a twisted wrapping to the sweet end. The EW 7 has a production capacity of up to 400 packages per minute. The sizes of the soft sweets may range between 30 mm x 12 mm x 7 mm and 50 mm x 25 mm x 16 mm.

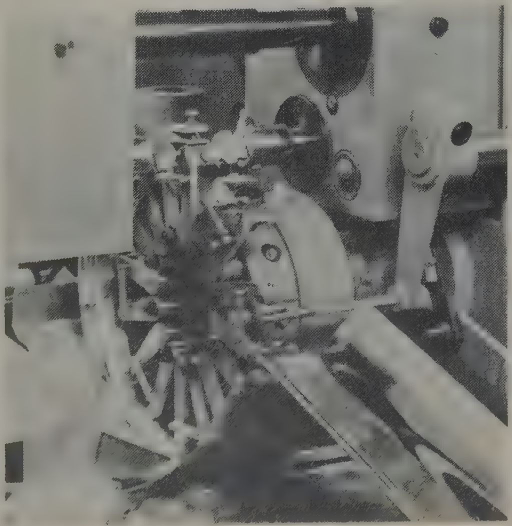
The new model EW 8 wrapping machine for soft sweets and chewing-gum significantly extends the application-range of NAGEMA wrapping machines of the standard series EW—highly respected for many years.

The EW 8 packs up to 750 single pieces in end-folded wrapping, with picture inset. The size of a single piece may be between 20 mm x 12 mm x 5 mm and 36 mm x 25 mm x 16 mm. Since the EW 8 is based on the proven standard-series EW, it features all advantages of a sophisticated-tested machine, now available in series production.

A new generation sweets' wrapping machine

The new *wrapping machine for hard sweets in twisted wrapping, type EK 1,* has been developed especially for candy factories with high daily production.

This machine, with its continuous operating mode, represents a new generation of candy-packaging machinery. It packs up to 1,200 pieces per minute in double-faced twisted wrapping with inserted strip. Continuously or intermittently-printed waxed paper or cellophane is processed from the reel as packaging material.



The special advantage of the machine is that it replaces three machines of the type EU 4. Furthermore, the packaging material has the same printing design as in the case of intermittently-operating machines.

The EK 1 automatically controls the feed of hard candy, fulfills the requirement "No goods to be wrapped—no packing material," and feeds the packing material automatically. Thus the operator of the machine has to perform only supervisory functions.

Section of the twisted-wrapping station of the machines.

NAGEMA cacao and chocolate-processing machinery

With many years of successful tradition and, obviously, a high scientific-technological record of development, VEB Maschinenfabrik Heidenau is in a position to supply up-to-date machinery and equipment for processing cacao and chocolate. Also: To design, supply, install and deliver on a turnkey basis complete technological lines for industrial cacao and chocolate processing.

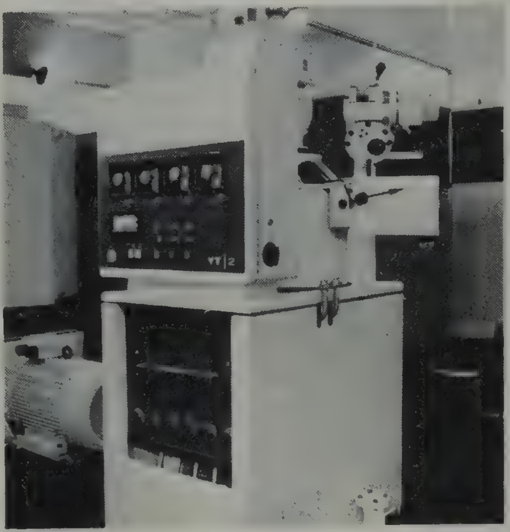
These complete technological lines include such processing stages as cleaning and storing of raw cacao beans; of cacao kernel breakage—and production of cacao mass, cacao butter and cacao powder; also, the production and processing of chocolate mass.

The following machinery and technological equipment should be of particular interest to the cacao and chocolate processing industry:

Konti roasting machine type 303 B, for the continuous thermal processing of cacao beans, hazel-nuts and other products, with a throughput of up to 1,250 kg/h.

Horizontal 12-pot cacao press type 1450/2, for the production of cacao butter, with an output capacity of from 360 kg to 1,100 kg/h, depending on the residual fat content of the press cake (between 8% and 24%).

Konti kneading equipment type 340, (rated output: 1,500 kg/h), for the production of chocolate paste; with a plasticizing unit connected to this equipment for chocolate paste with low-fat content.


Temperature-regulating machine type VT 2.

Roll-type pulverizing equipment, as five-roll machines, made in a series of four machine types, with a roll-working length of up to 1,400 mm and a throughput of up to 1,200 kg/h.

Dry pulverizing machine type CRT 3000, as discontinuously working equipment with a trough capacity of 3,000 kg.

Temperature-regulating machines type VT, which are produced in a series of four machine models in an output range between 200 kg and 1,400 kg per hour. By means of a three-step temperature-regulating system, these machines operate on the latest method of primary crystallization.

Hollow- and solid parts-making machines, with an output of from 12 to 22 shapes per minute, for the automatic production of a broad variety of chocolates and solid-chocolate articles.

Latest technology in packaging lines

VEB Verpackungsmaschinenbau Dresden offers packaging lines for hard and soft sweets, as well as for other confectionery, that help to enhance the rationalization effect in the packaging industry.

When hose-shaped bags are chosen as packaging material, the hard and soft sweets or other confectionary pieces to be wrapped in the machines are fed into the weighing device (type DW 4) and the contents of the consumer package are adjusted before they are proportioned.

Through a pendulum-bucket conveyor, the proper quantities are supplied to the bag-making, filling and sealing machine (type HM 2) where they are packed in hose-shaped bags.

The subsequent operation of packing the filled bags in boxes is carried out by the type-SF 2 filling machine—which packs hose-shaped and flat bags in shipping boxes. If necessary, the packaging line can be augmented by a palletizing machine.

It is possible to adapt the production range to the respective output required by the individual processor. The following throughput capabilities are offered:

Hard sweets................................between 300 and 1,400 kg/h.
Soft sweets.................................between 550 and 1,225 kg/h.
Confectionery............................between 370 and 1,665 kg/h.

When bar forms are to be packaged, the following line can be supplied.

To prepare the mass of soft sweets, chewing-gum or chewing substances, the bar-shaping machine (type ZK 1) and the bar-drawing machine (type ZS 1) are connected ahead of the wrapping machines of the standard series EW. In these machines, the product mass is processed into a bar. The ZK 1 is followed by the wrapping machines (the EW standard series) as may be required for a particular application. After the bar-packing, the packaging operation continues; it ends with the bulk packing in shipping boxes via the established packing machinery.

In addition to these packing machines, VEB Verpackungsmaschinenbau Dresden offers a wide range of other modern candy machinery, such as:

—Horizontal and vertical hose-shaped bag making machines.
—Machines for packing pasty goods in wrappings or cups.
—Machines for packing in folding boxes.
—Machines for packing of shipping cartons in shrink-wrap. □

ILKA

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condensers
cold heat exchangers
refrigerating units
cold-storage bays

frozen food storage bays
refrigerating plants
cold stores
block ice plants
chip ice machines
ice-cream freezers
cryogenic equipment
heat pump devices
refrigerating units
for reefer cars

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Dust removal installations

Electric eliminators
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and recovery of
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Circle 90 on Inquiry Card

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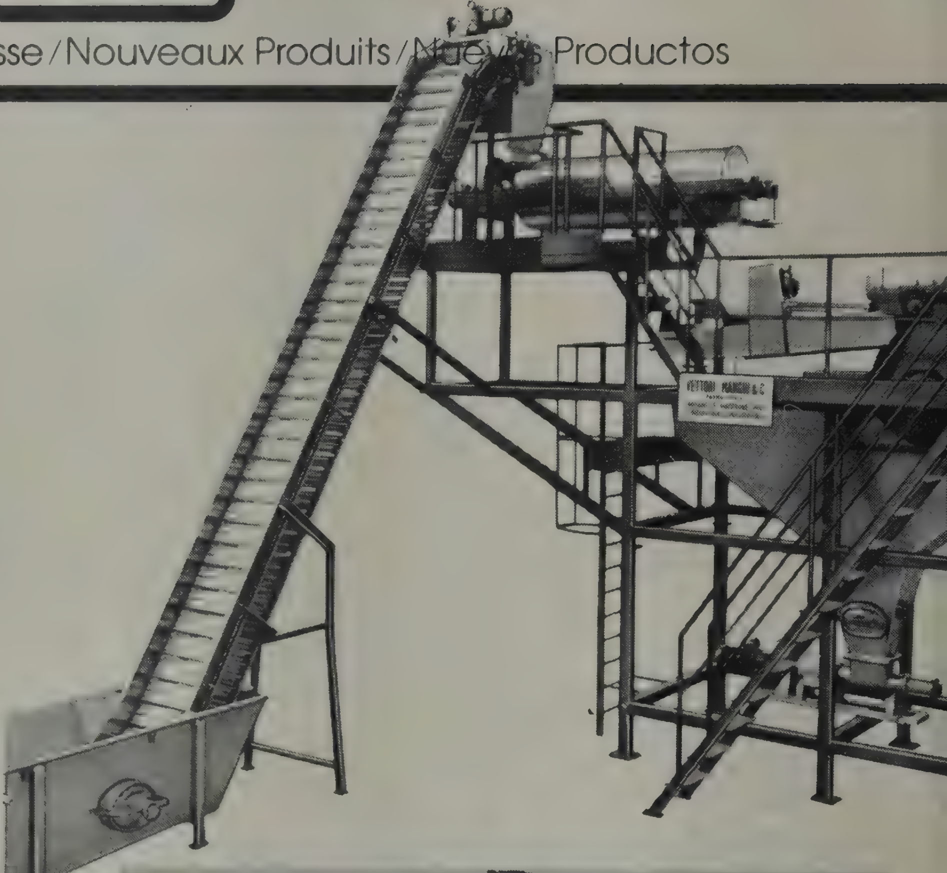
Circle 91 on Inquiry Card

New Products/Neue Erzeugnisse/Nouveaux Produits/Nue s Productos

Tomato-pulp production plant

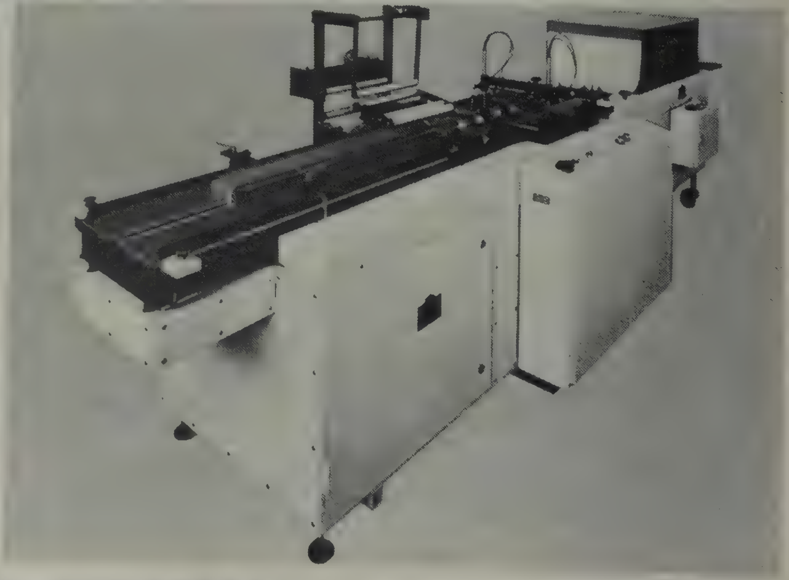
This plant is designed to produce superior-quality pulp in terms of granulometry, consistency, absence of peels/seeds/green spots, and juice parting. Inflow of fresh product is 10 tons/hour. Average yield is 50% of drained pulp—depending on tomato type processed and ripeness; a firm pulp free of seeds and peels with minimum juice outlet—even with unpeeled, unscalded tomatoes. Seed separation, slicing and slice distribution are outside of the de-pulping drum. The slices move between a revolving drum with a pierced sheet and outer pressing cylinder. Thus, extruded pulp falls into the drum onto a fixed hopper; peels collect outside and are removed by brushes and a scraper.—*Vettori-Manghi & C. SpA, Parma, Italy.*



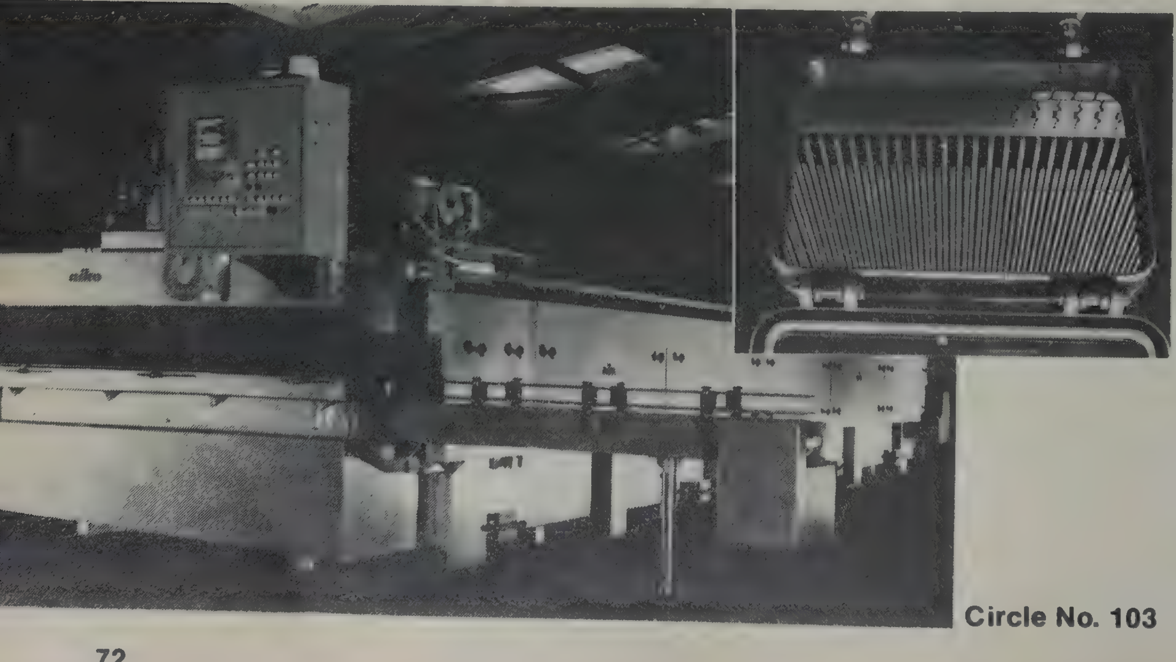
Circle No. 101

Efficient sleeve-bag machine

Various advantages are claimed for sleeve-bag machine No. PS 400; promised is a fully-wrapped foil package without waste of oil. Its high-technology shrink-wrapping is for solid and non-solid product, plus textile goods. Its manual input is up to 30 cycles/minute; its manual equipment automatic input is to 60 cycles/minute, with magazine charge to 80 cycles/minute and tape charge is the same. There's optional equipment for welding the longitudinal seam. This one-operator unit handles foils made of polyethylene, hard/soft PVC, low-pressure polyethylene.—*Hugo Beck Maschinenbau GmbH & Co. KG, Dettingen, West Germany.*



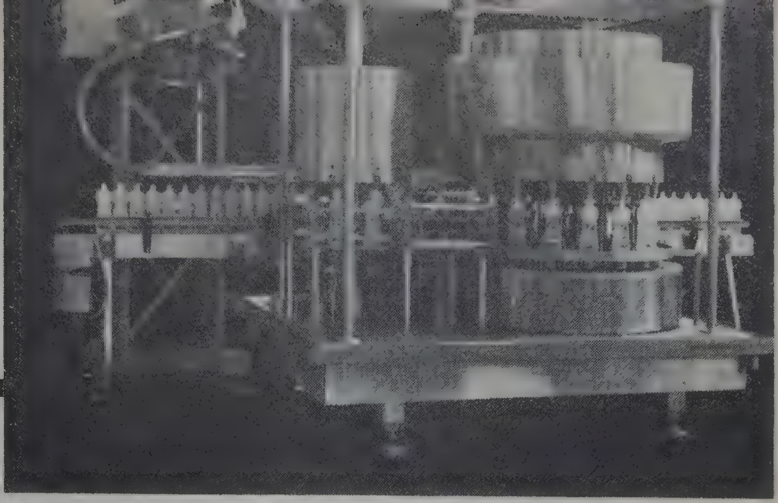
Circle No. 102

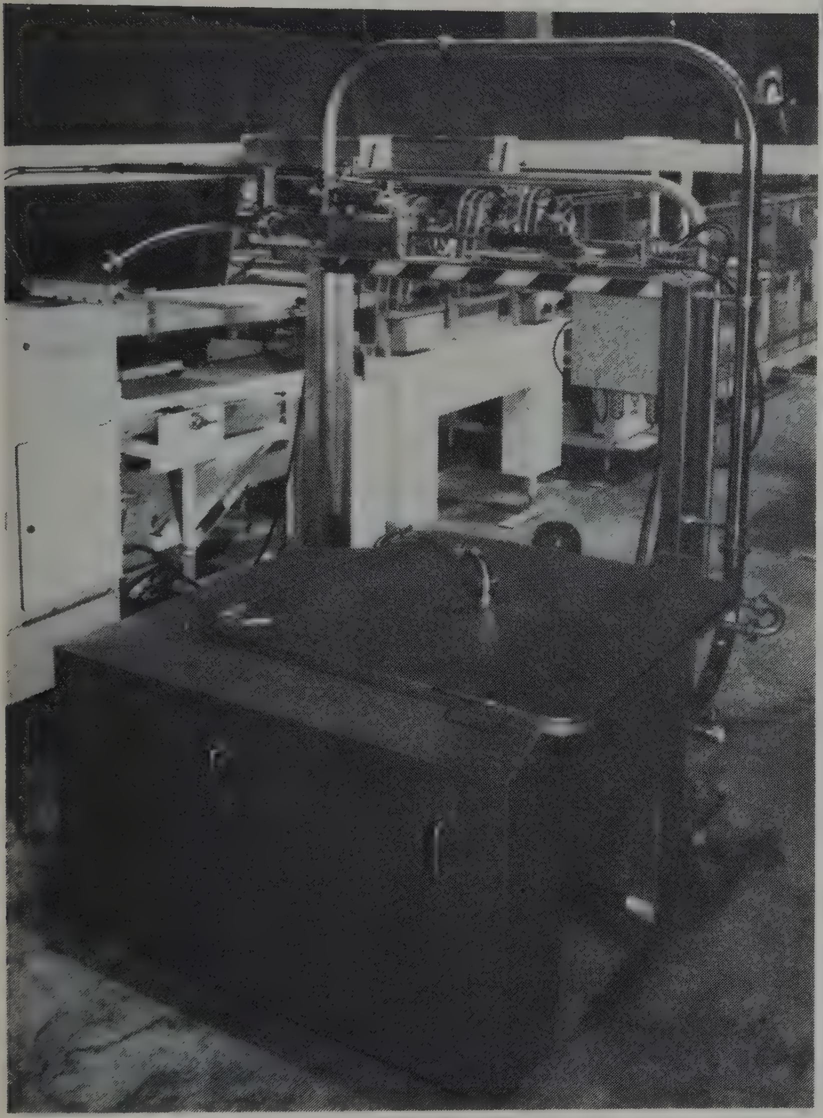


Circle No. 103

Pasteurizer/cooler system

This unit is described as a one through-flow, steam-overspray pasteurizer/cooler system walking beam for bottles, glass jars and cans. These are fed into pasteurizer via two-lane, slat-band conveyor, passing through a steam sluice/rinsing zone and onto the saturated steam. Now, containers pass through whole machine on the walking beam, for high energy saving. And the cooling zone uses less steam, with three-zone, stepwise cooling.—*Niko GmbH & Co. KG, Nettetal, West Germany.*





Aseptic filling-capping line

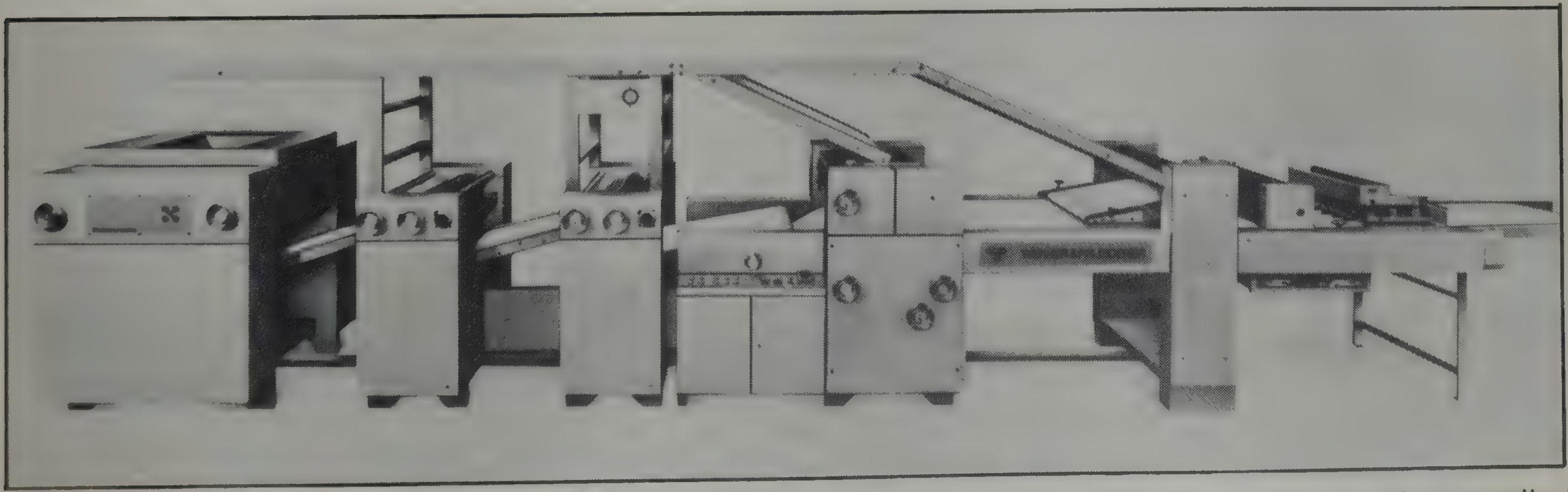
The latest in a string of innovations in liquid-filling equipment is this aseptic filling-capping line for glass jars with aluminum heat-sealed caps. The unit, under sterile laminar flow, includes a turning-rinsing machine, a cleaning machine (hydrogen peroxide), sterilization tunnel and an aseptic filler-heat sealer. Unit shown is on a pilot operational line in a French dairy.—*SERAC Automatic Packaging Machines, La Ferte-Bernard, France.*

Circle No. 104

Fully automated fat or butter spreader

This automated fat or butter spreading unit is designed to operate in conjunction with the Seewer Rondo booking and lamination systems for processing Danish and puff paste. A sheet of fat/butter is applied on top of the extruded or presheeted paste, either intermittently or continuously. Widths and thickness are adjustable and, in case of intermittent operation, a fully integrated piston-assembly with adjustable stroke will determine shot-weight capacity. Stainless steel construction means maximum corrosion resistance.—*Seewer Rondo, Burgdorf, Switzerland.*

Circle No. 105



Combined cutting/molding machine

The RTA-G cutting and molding machine is designed to produce cut hard biscuits and molded products. In combination with a preceding dough brake or a laminator, this combination machine can also be used to make crackers and cocktail specialities. Also, the cutting machine can be supplied with a working width of 800 or 1,000 mm, and it is designed for an oven length of up to 50 m.—*Werner & Pfleiderer Maschinenfabrik, Stuttgart, West Germany.*

Circle No. 106

Attention: Equipment Manufacturers!

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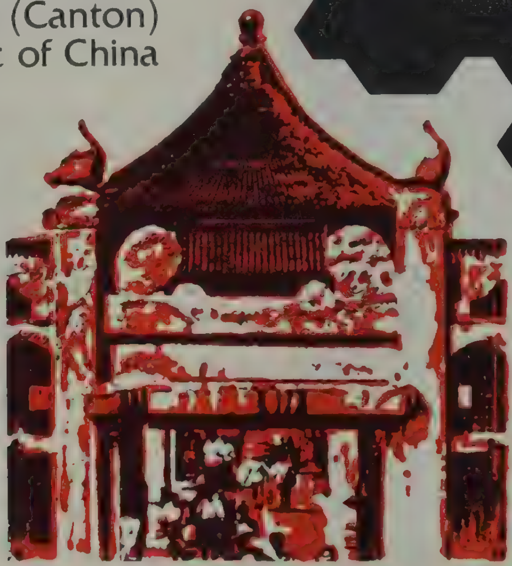

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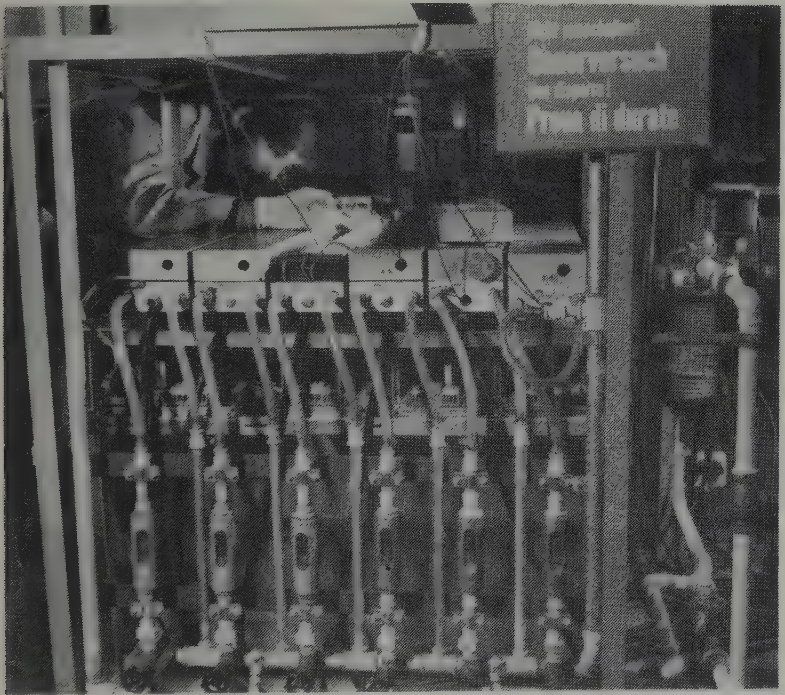
Circle 48 on Inquiry Card

Radiation (UV-C) destroys bacteria

A leader in germicidal UV-C radiation demonstrates how strong bactericidal action makes packed goods less perishable—a lethal process for safety.

Surface sterilization of packing materials by ultraviolet radiation is a practical method well established with numerous top manufacturers of packing machines. Now, BBC Brown Boveri, Baden, Switzerland, has developed very powerful UV-C lamps (ultraviolet rays with a 254 nm wavelength) that deliver a lethal bactericidal action.



These UV-C lamps from BBC achieve lethal rates topping 99.99% in sterilizing packing materials for foodstuffs.

These intensely-powerful lamps, which are also good for use in high-humidity installations, find application in all types of packing installations. The great range of problems in the foodstuffs' industry (and pharmaceuticals) respond, and economically so, to this BBC technology. Call it, if you will, *stronger* preventive medicine.

The evidence is at hand. Tests at the Institute for Foodstuffs Technology and Packing, at the Technical University at Munich, have proven decisive. Such tests on mold conidia, bacillus spores and yeast cells document that these high-power lamps, even with only a few seconds' exposure, are truly lethal.

In pinpointing this lethal effect on microorganisms on packing-materials' surfaces, various parameters were checked by the Institute. In partic-

(Continued on page 76)

KRONES

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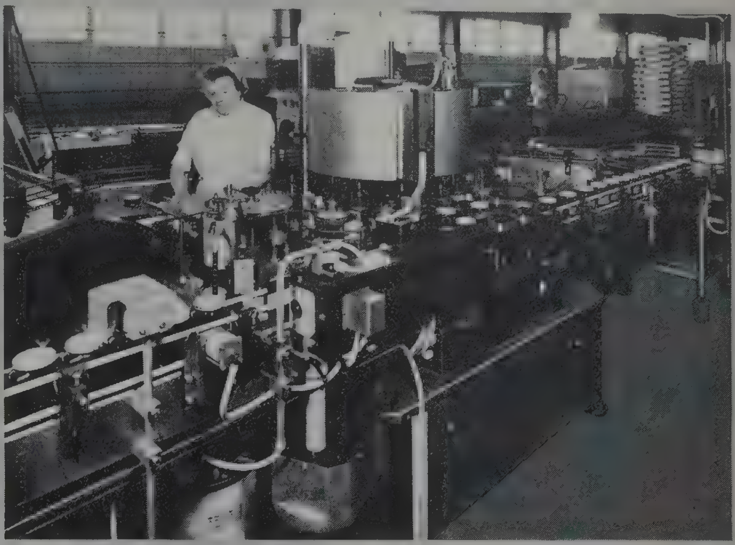

Labelling machines incorporating cold glue and hot melt gluing stations are available to suit all labelling applications and for handling most types and shapes of containers.

KRONES ofrece etiquetadoras para cualquier tipo de etiquetado según lo requiera el caso. El sistema de etiquetado puede ser con adhesivo frío o en caliente (hot-melt).

Brochures and further information available on request

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Circle 49 on Inquiry Card

The precision UV-C lamps are factory-tested in continuous service with the aid of a UV-sensor.

ular, the school investigated the effects of the distance from the source of radiation, angle of incidence on irradiated surfaces, atmospheric humidity and the UV dose.

The Munich Institute's report on these investigations was most positive. It said: "Compared with chemical methods of sterilization, irradiation with UV has the following advantages to offer: There are no problems of residue or exhaust air; and the process functions without an aqueous phase—i.e., the method is totally dry—and it involves relatively low costs." There is one caution: Before using UV, it's advisable to check whether the physical properties of packing materials, and hot-sealing varnishes, are not adversely affected by the treatment.

The BBC UV-C radiation units have three parts: The lamp, supplied with a length of either 50 or 70 cm, the lamp housing and the power pack. Installation of UV-C units on existing packing machines is a question of space; and/or how the machine was designed. Of course, all is much simpler if the germicidal unit is made part of the original design for packing machines.

Several applications in design are possible. One is to arrange the lamp above the conveyor belt for the materials to be sterilized. The so-called "radiation shadows," the angles that the UV rays cannot reach, are avoided by selecting packing material with a smooth surface and suitable shape. Also, goods can be irradiated *after* they have been packed. Here, it's essential that the treated goods do not hinder the UV rays.

This sterilization method's principal advantage is its high lethal rate (99.99%) for bacteria. And, because there are no residual effects (as with chemical disinfection), the environment is safe. A shield against comparatively harmless UV radiation for operating personnel is a minor consideration.

But, in all, the advantages of simplified handling, complete product safety and low operating costs make the UV-C radiation a technology of choice.

Circle 120

Reverse belt prevents jamming
Three progressively faster moving belts separate and single line feed bottles or jars

new cleaner-unscrambler

a great combination

BOTTLE TRANSFERS ARE ELIMINATED by mounting the ORBIT BOTTLE CLEANER directly on the 4 BELT UNSCRAMBLER. Unscrambler single line feeds the bottles or jars into the Cleaner. There bottles are rinsed continuously over a 90° arc by individual stainless steel tubes inserted into their necks. The jars are rinsed by stationary nozzles. The simplicity and compactness of this combination makes for a great operation

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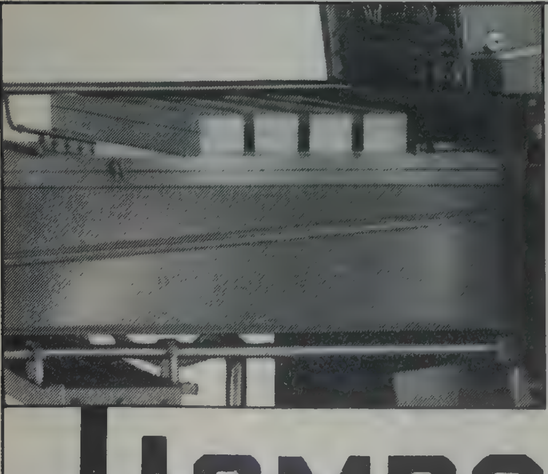
Circle 50 on Inquiry Card



A LONGER SHELF-LIFE FOR SWEET AND SOUR PRODUCTS

Packing materials – cups and lids – are decontaminated by means of high-intensity UV-C radiators. Re-infection is impossible due to sterile reaction zone.
Please ask for detailed information.
BK 6005/5-UV-C Cupfiller with fully automatic cup feed device and piston valve fillers suitable for connection to a C.I.P. cleaning system for filling of e.g. 3 products one on top of the other. – The BK machines (unit-construction-system) are very variable. – BK machines in UV-C execution are available with an output from 4000 to 46000 cups/h.
HAMBA Cupfillers for fresh products with an hourly output beginning from 2000 cups/h.

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Högel

Circle 51 on Inquiry Card

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  - dock unloading and fish sorting equipment,
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  - drying, salting and fish meal works,
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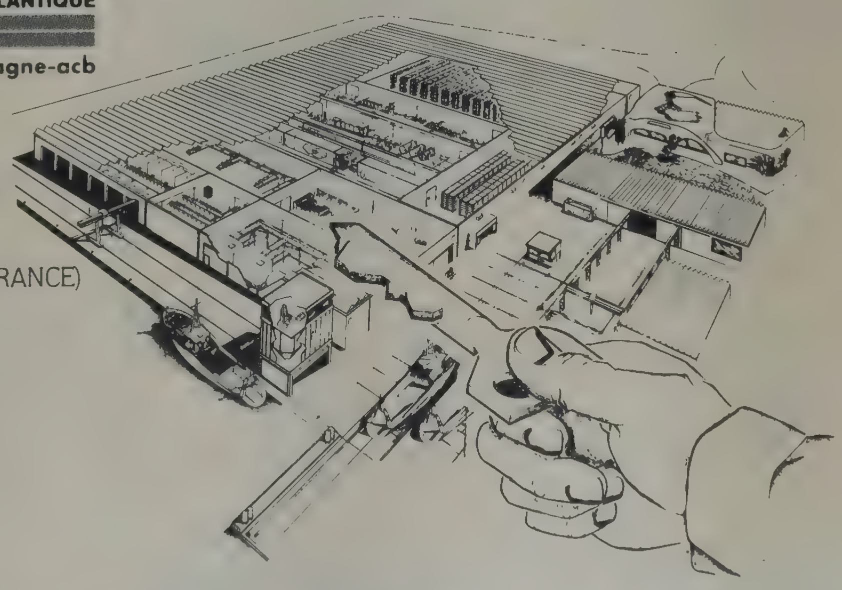


acb, turnkey plants

Circle 52 on Inquiry Card

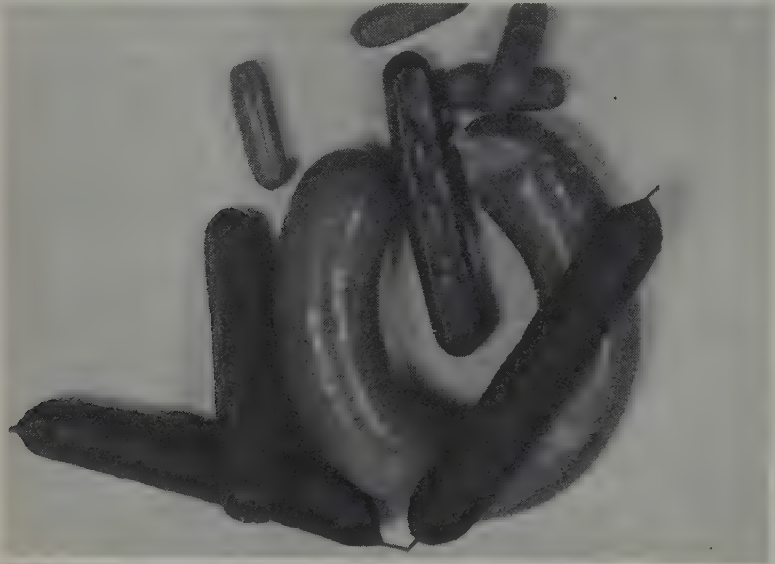
Deboners aid production of "new cuts"

Turkey sausages, chicken weiners, poultry-based cold cuts? They're creating growing markets, markets that begin with a good deboner. There's a threefold attraction to this production. Meat is recovered mechanically on an automatic separator from fowl parts normally not economically processed. Then, contents are lower in fat/calorie contents; and the protein ratio is higher than some conventional red-meat components. (Equal to 85% lean beef trimmings in sausage.)

A bonus is that pesticide residues and antibiotics are absent from such meats. Escallops, rolls and a variety of sausages have been thus produced for more than 10 years in Europe.

This automatic meat-bone separator greatly decreases processing labor costs. Logically, low cost for mechanically-deboned poultry meat becomes a big contributing factor to its growing acceptance.—*Stephen Paoli International Corp., Rockford, Illinois, USA.*

Circle 165



A lift for handling problems

Many innovative features are standard on the new ECA series of these cushion-tire, electric fork-lift trucks. Hoist capacities on a 500-mm load center are rated at from 1,750 kg to 3,000 kg—which cover most food-production environments.

Among key technical improvements: Regenerative braking circuit sends power back to the battery, SCR controls are fan-cooled, modular hydraulic valve design makes adding future attachments easy, disc brakes are oil-cooled, the accelerator is solid-state and maintenance-free, and there's a 12-volt accessory system with LED diagnostic panel for simplified service.—*Clark Industrial Truck Division, Battle Creek, Michigan, USA.*

Circle 166

Sample "Consistometer" is simple

The CSC/Bostwick Consistometer is termed a simple, dependable instrument that accurately determines sample consistency by measuring the distance that a material flows under its own weight during a given time interval. It is especially valuable for processing such foods as jams and jellies, tomato paste, baby foods, yogurt, pie fillings, condensed soups and other highly viscuous products.

The stainless-steel unit enables users to predetermine formulae to standardize production lots. Its gate is spring operated and held by a positive-release mechanism permitting instantaneous sample flow. The trough is graduated in 0.5 cm divisions to permit accurate measurement of flow.—*CSC Scientific Co., Chicago, Illinois, U.S.A.*

Circle 167

HOW TO CUT YOUR WATER HEATING COSTS AS MUCH AS 30%...

The Pick Direct Steam Injection System uses 100% of the BTU's, and maintains accurate temperature control under varying steam/water flows, without "hammer".

We have two brochures that show you how. Send for yours today...

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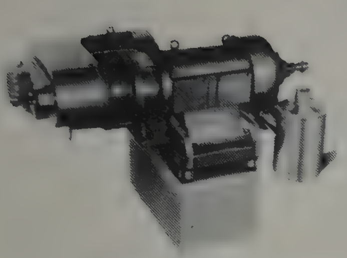
Circle 87 on Inquiry Card

Westfalia Separator – your partner for waste-water treatment. With our centrifuges and decanters we can offer you ideal solutions to your problems.



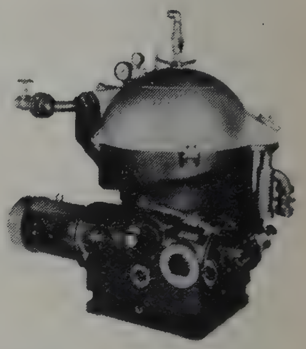
Westfalia decanter
type CA 220

Decanters type CA for de-watering sludge.

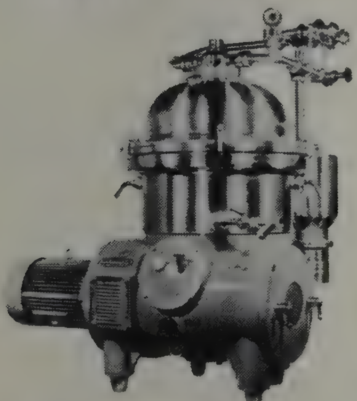
Separators type OSA for combating bulking sludge.

Nozzle bowl concentrators type DA and self-cleaning clarifiers type SA for concentrating sludge.

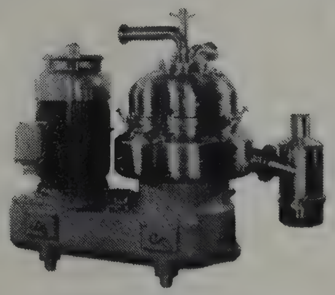
The advantages of installing Westfalia plant: highly efficient de-watering, low capital and operating costs, compact design, automatic operation.



Westfalia mineral oil separator
with self-cleaning bowl
type OSA 35



Westfalia clarifier
with self-cleaning bowl
type SA 45



Westfalia nozzle bowl concentrator
type DA 100

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Circle 53 on Inquiry Card

Detecting myxobacteria using new nutrient pads

"Frog-egg bacillus" is a pathogen dreaded by beverage producers. On culture media containing sugar, it develops a gelatinous slime containing dextran; it can clog entire piping systems in lemonade and juice-bottling plants.

In wine, the bacillus causes the "softening" phenomenon—a change from normal consistency to an oily, viscous makeup. The bacillus can also do heavy damage in the sugar industry. It's able to turn large quantities of unrefined sugar into a gelatinous, slimy mass.

It is, thus, most important to detect the bacillus on a culture medium in a fully reliable manner. Enter "Weman," a new series of nutrient pads said to be ideally suited for reliable detection. On this substrate, myxobacteria develop transparent, phosphorescent colonies that are easily identified.—*Sartorius GmbH, Goettingen, West Germany.*

Circle 168

Fruit-juice test kit saves $$$

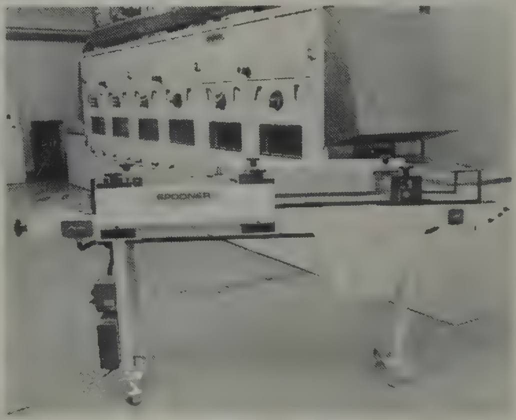
A fast, accurate method of sterility testing is offered to fruit-juice producers. The testing is based on detection of micro-organisms by a luminescence assay. This is a technique for which the supplier has achieved reknown. After a short incubation period, even a single contaminating organism can be detected.

The simplified method is said to be up to five days faster than conventional plate-counting. Thus, a drastic reduction in storage time before juices can be approved and released is a major commercial advantage.—*Lumac BV, Schaesberg, The Netherlands.*

Circle 169

Pita-bread maker

This Pita-bread make-up plant has been introduced to augment the range of pre-bake equipment known as the Spooner Series 90. Units can be assembled to produce either the oval Pita or round Pita—according to customer demand.



Production rates determine whether a single or multiple lane unit is required. Pita bread, says the maker, "is undoubtedly an expanding market in the United Kingdom." It is felt that this low-cost unit will be welcomed in this market—"enabling all manufacturers to be catered for by a home-based supplier."—*Spooner Industries Ltd., Food Machinery Division, West Yorkshire, England.*

Circle 170

Cocoa suspenders

A standardized natural carrageenan, Ticaloid No. 517, is used at 0.15% to 0.2% of total formulation in chocolate milks to effect cocoa suspension—while improving the "mouthfeel" of the instant chocolate milk.

Also, Colloid No. 517 is preblended with the cocoa, the sugar and other flavoring agents, then added to cold milk and mixed well. *(Also see carrageenan "Product possibilities," FEI, May 1981 issue, page 48.)—Tic Gums, Tragacanth Importing Co., New York, New York, U.S.A.*

Circle 171

ITT RAYONIER
FOREST PRODUCTS

ITT Rayonier Vanillin stammt von Lignin, dem Bindemittel von natürlichen Holzfasern in Bäumen. Es wird in einem speziellen Prozeß gereinigt, was zu einem Lebensmittelgüteprodukt von hochster Qualität führt.

ITT Rayonier Vanillin wird in Geschmackstoffen für Konfekt, Eis, Backwaren und Getränkegebraucht. In Aromen wird es als Süßstoff, Stabilisator und zur Verstärkung verwendet. In industriellen Anwendungen ist es ein organisch chemisches Hilfsmittel.

Circle 54

ITT RAYONIER
FOREST PRODUCTS

Il Vanillin Rayonier della ITT è un derivato del lignino, il legante naturale di fibra de legno degli alberi. Viene purificato mediante un processo esclusivo che risulta in un prodotto di categoria alimentare della più alta qualità.

Il Vanillin Rayonier è usato in estratti per confetture, gelati, pasticceria e bevande. Nei profumi viene usato come dolcificante, fissativo e modificatore. Nelle applicazioni industriale è un prodotto chimico organico intermedio.

Circle 83

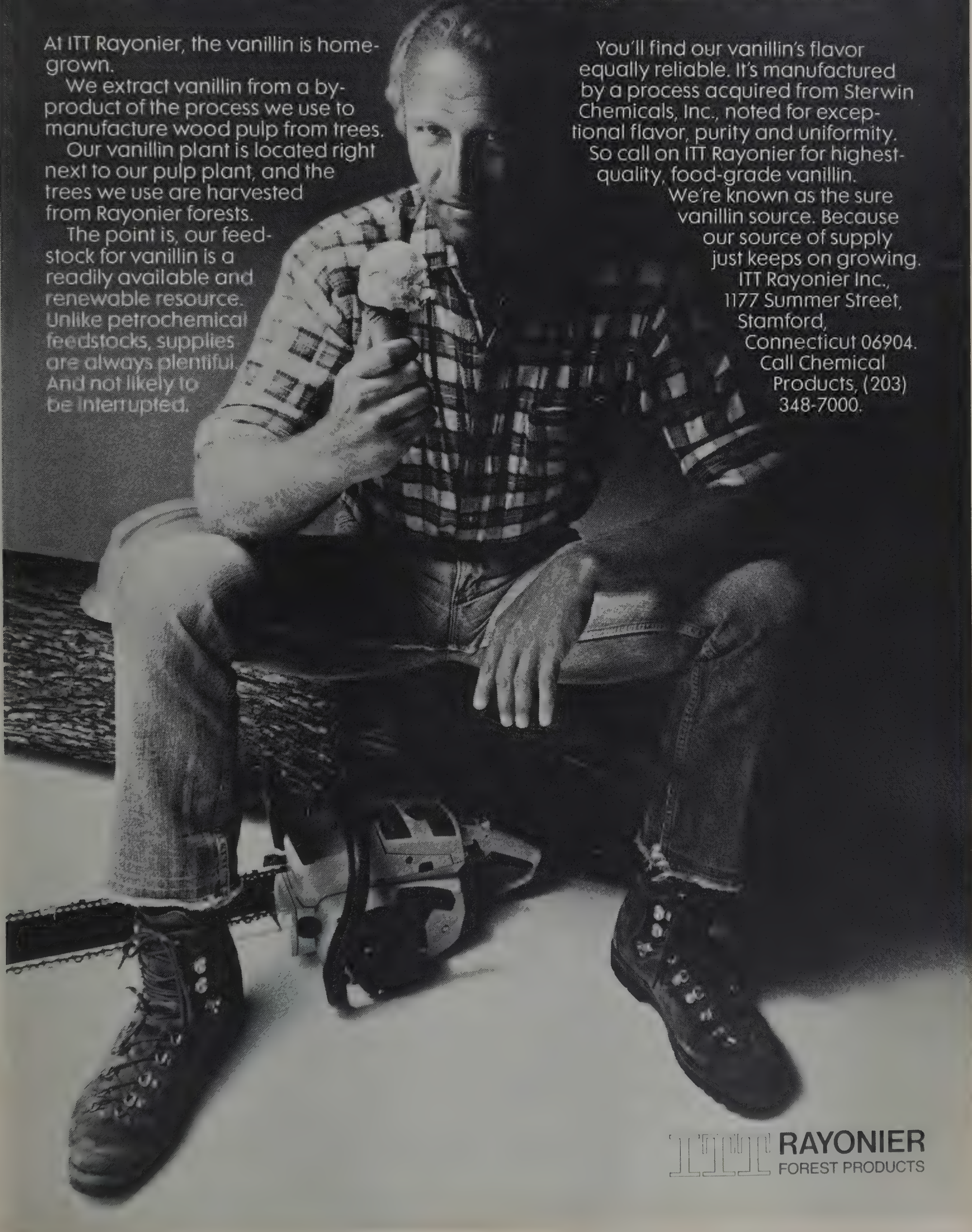
ITT RAYONIER
FOREST PRODUCTS

El Vanillin Rayonier de ITT es derivado de la lignina, el aglutinante natural de la fibra de madera de los árboles. Esta purificadò con un processo exclúsivo que de como resultado un producto comestible de la mejor calidad.

El Vanillin Rayonier de ITT se utiliza en los agentes de sabor de confiterías, helados, productos de pastelería y bebidas. En los perfumes se utiliza como dulcificador, estabilizador y modificador. En sus aplicaciones industriales es un agente químico intermedio y organico.

Circle 84

Why a forest products company may be the best source of food-grade vanillin.



At ITT Rayonier, the vanillin is homegrown.

We extract vanillin from a byproduct of the process we use to manufacture wood pulp from trees.

Our vanillin plant is located right next to our pulp plant, and the trees we use are harvested from Rayonier forests.

The point is, our feedstock for vanillin is a readily available and renewable resource. Unlike petrochemical feedstocks, supplies are always plentiful. And not likely to be interrupted.

You'll find our vanillin's flavor equally reliable. It's manufactured by a process acquired from Sterwin Chemicals, Inc., noted for exceptional flavor, purity and uniformity.

So call on ITT Rayonier for highest-quality, food-grade vanillin.

We're known as the sure vanillin source. Because our source of supply just keeps on growing.

ITT Rayonier Inc.,
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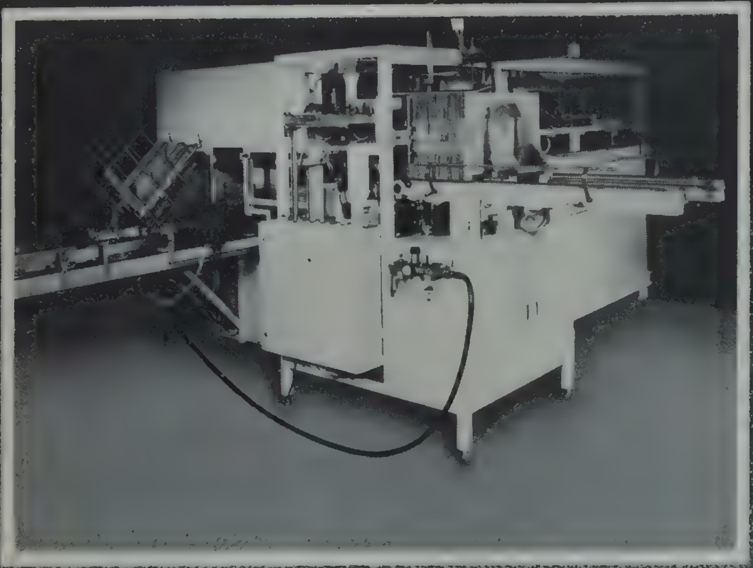
Call Chemical Products, (203) 348-7000.

ITT RAYONIER
FOREST PRODUCTS

Circle 55 on Inquiry Card



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case forming-, packing and sealing machine

- Loading of the case through the bottom panel.
- Integrated case sealing section for krafttape, cold glue or Hotmelt
- Specially for soft or fragile products like margarine tubs and biscuits.
- Long experience in handling and arranging of difficult products.

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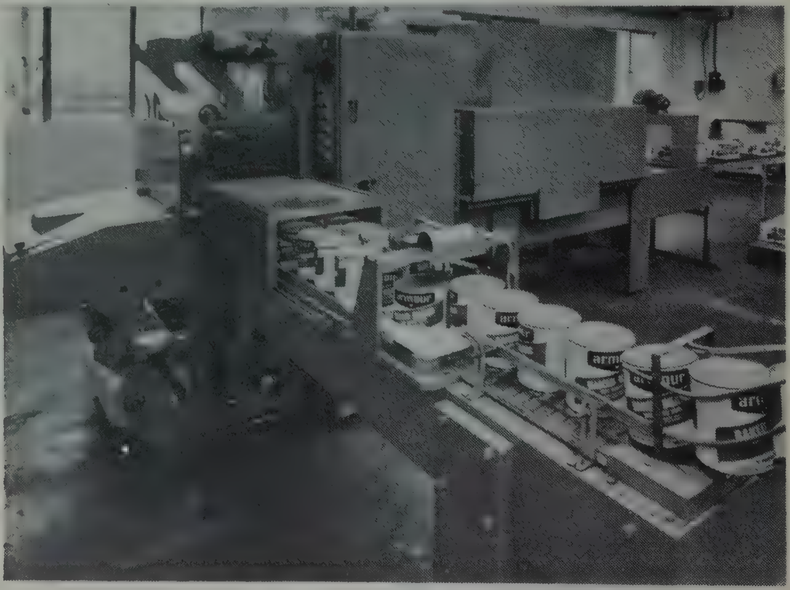
Circle 56 on Inquiry Card

Shrinkwrap system for jumbo cans

What is termed a "unique packaging system" for shrinkwrapping jumbo-sized cans for the catering trade has come on-stream at TKM Foods Ltd., as part of its £2 million Maldon, U.K., Canning Plant modernization. The facility is also said to be the world's fastest jumbo (size 10) canning line.

The new facility is comprised of an automatic Lerner MS.30 sleevewrapping machine that is coupled with a 34/15 shrink tunnel. The sleevewrapper has been adapted to incorporate both baseboard-feeding and product-collating functions within the basic machine. The board feeder—a standard unit with a number of Lerner installations—is hopper-fed. It is capable of handling a variety of different baseboard materials; carton or corrugated board are handled with equal ease.

Positive integration, using solid-state technology, between board feed, collation and machine units guarantees that the wrapping cycle can begin only when both baseboard and product are in the correct relationship. With highly-efficient wrapping and sealing, and no faulty loading cycles, the MS.30's failed-pack output is trimmed virtually to a zero factor. The operating speed is limited only by the delivery rate of the infeed system. Speeds of 16 packs/minute with the size-10 catering cans in a 3x2 configuration are typical at Maldon.



The collating unit provides an in-built, optional two-stage facility. It allows single or multi-row collations to be produced as needed. At this site, a single-lane conveyor feeds an in-line "equalizing" divider, functioning as the collator infeed. A twin-element detector box, using proximity switches that control lane clamps, minimizes collating time. And it ensures a 3x2 pack is produced whenever the

(Continued on page 84)

A COMMON SOURCE OF STARCH AND ALLIED SWEETENERS:

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Circle 57 on Inquiry Card

FOR GREATER EFFICIENCY IN SARDINE DRESSING AND PACKING— RUS MACHINES

This line of equipment is ideal for use aboard fishing vessels with canning facilities, as well as onshore fish canneries.

The RUS machines, equipped with a continuously moving loading conveyor belt—

- increase production output by as much as 75% over manual dressing,
- reduce the labor force by at least 10 employees per shift,
- increase the amount of free floor space by 20 sq. m.

	Models	
	RUS-2	RUS-2M
Output, cans per minute	30	30
Size of fish handled, mm.	180–225	160–185
Dressed size, mm.	114	114
Quantity packed per can	3–6	3–6

For complete details, contact:
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35 Mosfilmovskaya Ul., Moscow 117330, U.S.S.R.
Telephone: 143-86-60; 143-87-51
Telex: 411068 TEHEX SU; 411228 TECEX SU

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minimum number of cans has been delivered by the infeed.

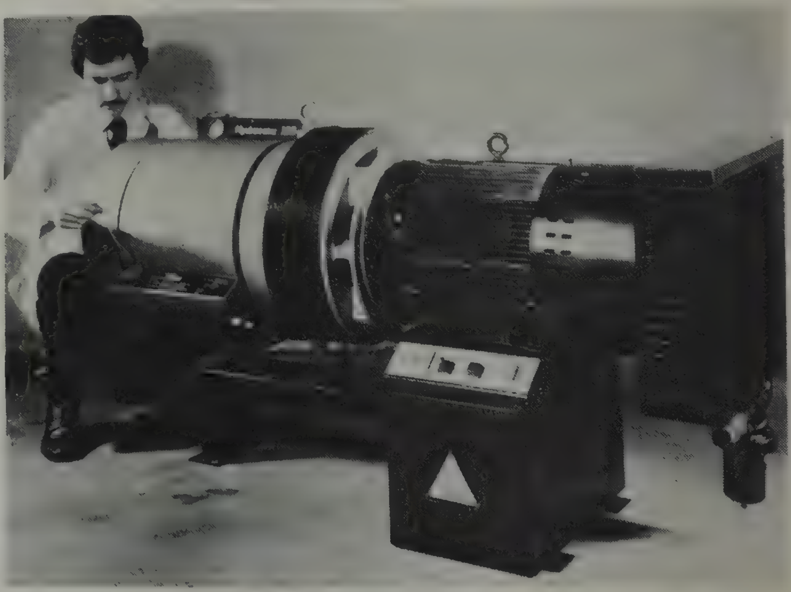
Equally important, though less obvious, is the advanced technology in the shrink tunnel. Designed for high-speed, thick-film operation, the 34/15 has reduced heat loss—via sophisticated insulation—to negligible proportions. High-volume, low-velocity air flow in the chamber, plus a linear-heater layout, have significantly improved thermal transfer and envelope configuration.

The combination of minimal film consumption and the use of a flat board at about 60% the cost of the conventional tray, elimination of tray-erection costs, plus tunnel-energy conservation, combine for significant savings overall—without compromising pack integrity or quality.—*Lerner Ltd., Enfield, U.K.* **Circle 173**

Breakthrough in compressors' ability

The first of what's termed a "new generation" of industrial air compressors is being marketed. Their promise is to "use less energy to produce more air, more quietly than any comparable compressors on the market." Specifics promised by the Model 128:

A novel auto-idle system saves energy. It's an extremely quiet machine, with only 79.5 dBa at one meter—said to be 20% under earlier models. Air pressure has been increased to 8 bar, as standard. Oil carryover is reduced to a microscopic one part per million by weight—said to be an 80% improvement. Also, the unit occupies only half the floor space of comparable screw or reciprocating compressors. Finally, efficiency has been boosted to 4.1 cfm/hp.—*Hydrovane Compressor Company Ltd., Worcestershire, U.K.* **Circle 174**

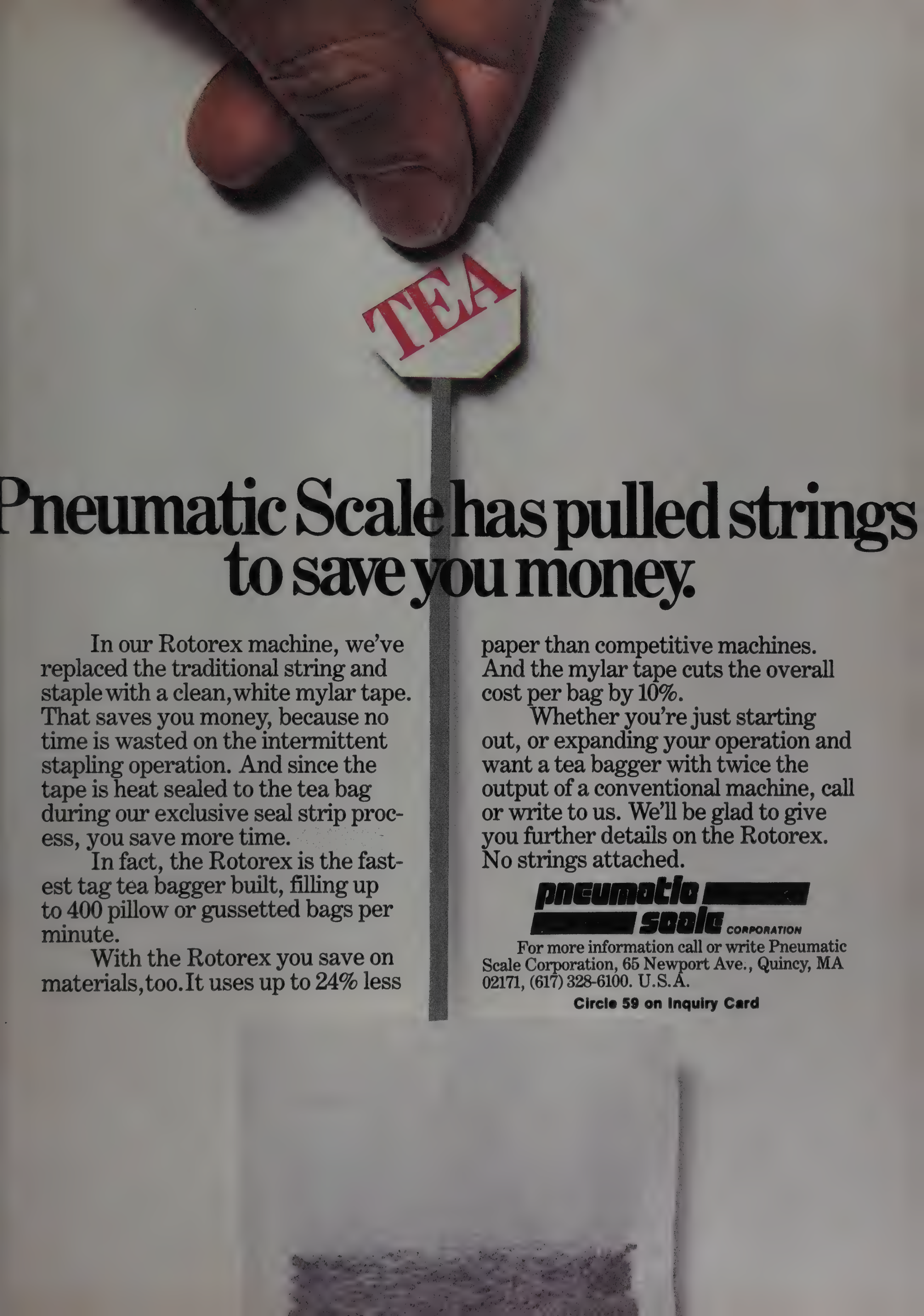


Indicating controllers are rugged

The 4195-Series Gauge Pressure Indicating Controllers feature an energy-saving relay and nozzle design that maintains low air consumption.

(Continued on page 100)

Circle 58 on Inquiry Card



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In fact, the Rotorex is the fastest tag tea bagger built, filling up to 400 pillow or gussetted bags per minute.

With the Rotorex you save on materials, too. It uses up to 24% less paper than competitive machines. And the mylar tape cuts the overall cost per bag by 10%.

Whether you're just starting out, or expanding your operation and want a tea bagger with twice the output of a conventional machine, call or write to us. We'll be glad to give you further details on the Rotorex. No strings attached.

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Circle 59 on Inquiry Card

In Italy, a critical question: Choosing the best equipment to freeze tomatoes

A crucial question for a new product, peeled frozen tomatoes, was the selection of freezing equipment to be installed in the new factory for "UNICOOP" in Caserta, Italy. In 1980, UNICOOP pioneered in developing frozen peeled tomatoes.

"The only freezer supplier that could offer an advanced product testing program, qualified application knowledge and confidence in its freezing equipment to do the job with the new product was Frigoscandia," says the President of UNICOOP Dr. Pasquale Lillo. "Frigoscandia's international reputation for quality in its freezing equipment based on advanced technology has been confirmed after the first season of operation on the new FLoFREEZE Belt freezer," continues Dr. Lillo.

UNICOOP belongs to Unione Cooperative Italiane and it is joined with CONFCOOPERATIVE, which is one of the biggest cooperation groups in Italy. UNICOOP is a consortium for agriculture cooperatives for fruit and vegetables in the rich farmland around Caserta. More than 5,000 growers are organized in "AS.PR.O.," which is the regional association of product growers, and it is associated with UNICOOP.

UNICOOP started production of fresh, canned and glassed vegetables and fruits in 1970. The program covered a range of tomato products; peeled canned tomatoes, tomato purée, juice and concentrate—also preparations of peaches in syrup.

In 1980, UNICOOP launched IQF (Individually Quick Frozen) peeled whole tomatoes on the Italian and foreign markets under the brands "GLIDA" and "ARTICA". The product is available in ½, 1 and 2.5 kg polybag packages for the retail market and 10 kg packages for the institutional market. This soon became a very popular product for pasta, toppings (e.g. Pasta al Pomodoro, Pasta al Ragu), as an ingredient for steak sauce and other sauces, for high quality pizza processing, etc.

Special advantage of this FLoFREEZE Belt is that it freezes, without damage, the relatively heavy, wet and delicate products (like peeled tomatoes) with true fluidization.

Individual polybag packaging is integrated in the line and is fully automatic.

The frozen product is purely fresh, not pasteurised, and it is of best quality with regard to appearance, color, consistency, vitamin content and taste. The freezing process has also added another major customer advantage—individually frozen product for convenient portion control—an advantage recognized by the housewife as well as the institutional chef.

In the development stage, the product quality-control was carried out in cooperation with an Italian official institute. The completion of the new processing line came in time for the first crop of tomatoes in August, 1980. During the season the plant ran at full production in two shifts.

UNICOOP is noted for its expertise in growing and processing its fruit and vegetables. "We work closely with the field forces to receive products harvested to our standards of grade, size, cleanliness, etc," says Ferdinando Terlizzi, UNICOOP marketing director.

At the UNICOOP plant, prod-

(Continued on page 88)

Heating, cooling, slush-freezing, evaporating. Compact SAN-LOC scraped-surface heat exchangers can do it all. Efficiently. At a modest initial investment.

SAN-LOC's modular design lets you buy only what you need and add on modules as your production requirements increase. Modules are versatile and lightweight. So you can wall-mount them vertically or horizontally, or gang-mount them on a floor frame to save space.

In evaporating, SAN-LOC is engineered to protect delicate flavors with higher temperatures and short-time processing. In chilling and slush-freezing, it allows you to use direct expansion refrigerant instead of brine for economy. Best of all, because of its simple design, SAN-LOC can help you cut operational costs, too.

From cooking and cooling tomato paste, to slush-freezing citrus concentrates, to evaporating syrups or fruit purees—SAN-LOC is designed to be sanitary and efficient.

And remember, the SAN-LOC comes from the *VOTATOR* family of heat exchangers. So you can count on these affordable compact units for top performance. To find out more, contact us today.

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Circle 60 on Inquiry Card

ucts are washed, sorted, quickly heat-treated to prepare for the fully automatic peeling machine. After inspection, they are conveyed directly to the FLoFREEZE Belt for individual quick-freezing (IQF). Packaging of the IQF product in polybags is integrated in the line and completely automatic.

"The installation of the Frigoscandia FLoFREEZE Belt freezer has turned out to be exactly the right solution," says production manager Luigi Acanfora. Occupying only 13.1 x 6.5 m of floor space, the FLoFREEZE Belt delivers 3,000 kg of IQF frozen product per hour at a temperature of −18°C and an average cycling time of 20 minutes.

The extra-wide freezer enclosure also includes a rack section for freezing of larger products or packaged commodities. This section may be used as an ordinary tunnel freezer with trolley operation.

"A special advantage of the FLoFREEZE Belt is its ability to freeze without damage even relatively heavy, wet and delicate products like the peeled tomatoes with true fluidization" says UNICOOP President Dr. P. Lillo. "It accomplishes this through a new two-stage freezing process."

The tomatoes are quickly, yet gently, crust-frozen with the help of true fluidization in the first zone. Then the product is finish-trozen in the second zone belt. A perforated tray bottom is placed beneath the first-stage crust-freezing belt for controlled fluidization, which results in balanced air distribution and uniform freezing.

In order to meet sanitation needs the FLoFREEZE Belt is equipped with belt washer and dryer.

Including the latest extension, the plant now comprises 60,000 m², of which 25,000 m² is covered area. An important addition in the latest expansion was the construction of substantial low temperature frozen storage capacity.

"The combination of quality raw materials, processing technology and equipment are the reasons for the success of our peeled, frozen tomatoes, and we have also experienced an export potential for this product" says Dr. Lillo. "The FLoBREEZE Belt has proven its capability to our satisfaction and we have indeed realized all the anticipated advantages with the new freezer." Now, new frozen products are in progress, like different IQF vegetables and potato products. ☐

Circle 160

600 C.P.M. SYSTEM

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Circle 64 on Inquiry Card

New processed foods are coming from Swift & Co.

CHARLES E. MORRIS, Midwest Editor

It's a 'new ballgame' at Swift & Co., according to company president and CEO Joseph P. Sullivan. Old problems have been resolved, and the company is ready to meet the challenges of the future.

"Swift & Co. is no longer in the business of closing businesses and plants," Sullivan told a news conference in Chicago recently.

Sullivan described "the new face of Swift" as "a restructured company made-up of value-added processed foods" in five new operating groups: *Processed Meats, Poultry, Cheese, Dry Grocery* and *International.*

Ever since Swift's parent Esmark, Inc., decided last May to close certain units of the Swift fresh-meats division and spin-off the remaining units into a separate Esmark company called *Swift Independent Packing Co.* (SIPCO), "there has been a great deal of confusion about just what is happening at Swift, what we are and where we are headed," Sullivan observed.

For fiscal year ended Oct. 25, 1980, Esmark reported that Swift lost $9.8 million (down from a profit of $14 million in 1979) on sales of $1.3 billion (up 3.5 percent over the previous year). According to Esmark's annual report, the earnings decline "was attributed largely to poor showings by major new products, including dry soup mixes and extensions of the turkey line, and substantial losses in the turkey business early in the year."

After one quarter into fiscal 1981 "annual sales are running in the neighborhood of $1.7 billion," said Sullivan, "and that's a nice neighborhood to be in. It's fair to say that we are profitable."

Industry observers point out that Esmark's strategy of disposing of older Swift meat-packing plants and establishing a new Esmark company disassociated from Swift allows SIPCO to negotiate new labor contracts to make the new company competitive in the boxed-beef industry long dominated by Iowa Beef Processors. Esmark recently announced that SIPCO would re-open a former Swift boxed-beef plant closed about 18 months ago in Des Moines, Iowa.

In addition to supplying other customers, SIPCO will supply about 40 percent of the pork needed by Swift's processed meats group, said Sullivan.

Five business groups

Stressing that "our 125 year-old company will not only continue but will prosper," Sullivan outlined Swift's reorganization into five new groups:

Processed meats—includes breakfast meats, hams, bacon, franks and sausage. Swift "is virtually tied for first in the highly fragmented breakfast meats market," said Sullivan, "is No. 1 with a 14 percent share of the canned ham market in the U.S." and commands about "20 percent of the bulk dry-sausage market in the U.S."

Sullivan attributes the company's success in processed meats to products such as *Sizzlean*—the lean-meat breakfast strip developed to meet consumer dietetic preferences—and *Brown 'N Serve*, a pre-cooked breakfast sausage, both selling at their highest levels ever. In the food-service and ingredients market, Swift's *Char-proof Pepperoni* is widely used by pizza producers.

Sullivan further announced that Swift has added to its 25 U.S. food-processing plants with a new, $30-million processed meat plant in Kansas City "that will be a model of efficiency for our entire industry."

The new plant is said to feature state-of-the-art production technologies and techniques not currently found in plants of its kind. Much of the equipment, says the company, was specially designed and built to Swift's specifications, with "an eye toward processing high-volume, consistent, high-quality products."

Located on a 33.5-acre site, the plant contains 112,000 square feet of floor space on the main floor, with an additional 48,000 square feet on the mezzanine.

Some 450 employees will be utilized to process approximately 120-million pounds of product annually—including some of Swift's best-known branded products, such as *Sizzlean* and *Firebrand* breakfast strips, a full deli-sausage line, frankfurters, and bacon.

Poultry—currently commands 24 percent of the whole-bodied turkey market and 40 percent of the turkey-roast business, said Sullivan. Swift's ***Butterball*** brand dominates the industry, and brand penetration is being increased with line extensions such as ***Li'l Butterball*** smaller turkeys aimed at the growing year-round turkey market. For food-service operators, Swift markets prepared poultry products such as Chicken Kiev and Cordon Bleu under the *Regal* brand.

Swift shut-down three turkey plants during the past 18 months, but updated its Minnesota and North Carolina plants and "won't shut any more down," said Sullivan, as the company looks toward "more gradual growth" in the turkey market over the next decade.

Cheese—"Swift is now ranked fourth nationally in the cheese business," said Sullivan, where its ***Treasure Cave*** brand holds a 29 percent share of the blue-cheese market as the company accents new products: ***Goldbrick*** two-pound cheese spread and the ***New Dimensions*** line of cheese analogs for the food-service market, "the fastest-growing part of our cheese business." Swift has added more than 400 food-service distributors in the past two years, Sullivan added.

Dry Grocery—includes *Peter Pan* peanut butter—"our largest single product line in this business unit;" *Soup Starter,* introduced two years ago and "now profitable;" and dog foods, including the company's *Strongheart* and private-label brands.

Swift is still in the peanut-butter business despite the current peanut shortage caused by last year's disastrous drought, Sullivan pointed out. The reason, according to another company official is an early warning from agronomists at Estech General Chemicals Corp. (another Esmark unit, which manufactures fertilizers) that soil-moisture conditions in the South presaged a poor crop. This enabled Swift to acquire the peanut supplies it needed to stay in the peanut butter business. (Swift not only continues to make *Peter Pan,* but continues to advertise the brand while many other peanut-butter producers are virtually out-of-business—at least until the 1981 harvest. See: FE, Jan. '81.)

International—currently accounts for 25 percent of company sales and will handle sales of all product categories to non-U.S. markets.

Introduced two years ago, Swift's Soup Starter in "now profitable." Recently put into test-market is an extension of this line—"Stew Starter."

To support this new organization, Swift's sales force of 300 people has been revamped into two groups—one for the retail market and the other covering the food-service market—and is further supported by more than 100 broker companies. Thus, "retail . . . buyers no longer have to deal with one Swift person for processed meats and another for turkeys," Sullivan pointed out. In the food-service market, one sales person represents the entire line of food-service products to each end-user and distributor. Swift products are carried in about 30,000 supermarkets across the U.S. and by about 2,500 food-service distributor companies, he added.

R&D: Genetic Engineering, High-Protein Feeds

Swift's R&D group, numbering nearly 200 scientists and technicians, not only develops new products and maintains quality assurance but "is engaged in . . . programs ranging from animal genetic engineering to improve meat yield in poultry to a feed program which will convert normal grasses into protein concentrates equal in nutritional value to the protein contained in soybean or fish meal," said Sullivan.

New-product development includes a "stew starter" now in test markets, plus specialty cheese and peanut items, added Dr. Robert E. Smith, vice president of R&D at Swift.

Quality assurance at Swift employs a "sophisticated diagnostic tool" known as *HAACP*—the Hazard Analysis and Critical Control Point concept. Under this system, "each critical point in production is identified *before* production begins, and tests are performed before the product is cleared past these points," said Sullivan.

"Procurement" at Swift means more than just "purchasing," Sullivan pointed out. "We study crop and livestock production trends, climate trends and commodities markets. One tangible result of this activity is our ability to maintain supplies of peanut butter during the current crop shortage."

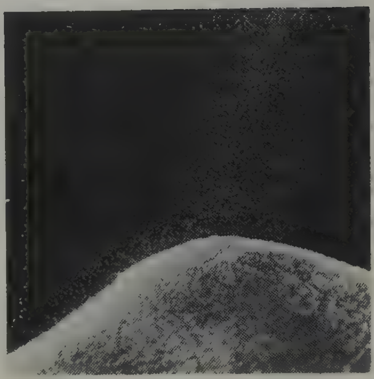
Distribution problems have been "turned around" with a computerized order-entry system which now results in 98 percent of all orders being shipped within three days, said Sullivan. Invoicing has improved to the point where about half of all orders are now invoiced on the same day that they are shipped, he added.—*Swift & Co., Des Moines, Iowa, USA.*

Extrusion cooking – a method with a future.

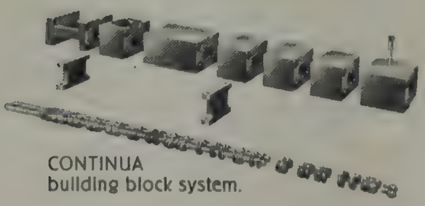
Advanced technology for cost-effective continuous processing of food products called "extrusion cooking" is especially applicable to foods based on starch, flour or protein.

- ☐ Starch-based products
  using special or modified starch.
- ☐ Extruded flour products
  Instant baby foods.
  Expanded flours.
  Breakfast cereals.
  Cold-formed pellets.
  Flat bread.
- ☐ Protein-enriched products
  Texturised vegetable protein.
  Enriched cereals.
- ☐ Other products
  Pet foods.

The energy saving CONTINUA, a continuously operating mixing and cooking twin-screw extruder, is Werner & Pfleiderer's contribution to this new technology. This universal system can combine and integrate several simultaneously performed overlapping process tasks to achieve a specific result. The special characteristics of the CONTINUA concept have proved themselves in practice in the production of chewing gum, chocolate, liquorice, boiled and other sweets.

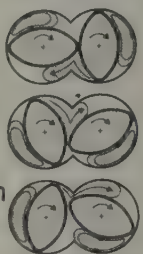


Each CONTINUA mixer/cooking extruder is assembled from components that can be adapted to produce the best and most economical results. This means that the combination of various conveying and shearing components of the screws achieves the best screw profile for each task, with exactly defined pressure, shear, temperature and conveying characteristics.

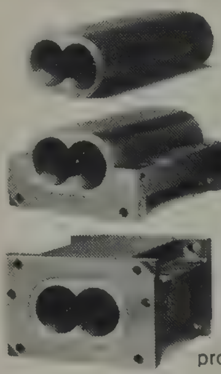


CONTINUA building block system.

The twin-screws rotate in the same direction within a process section made up of individual barrels, each with their own temperature control. The total processing length can be thus adapted within narrow limits to each user's requirements. Each barrel section consist of 2 horizontally split halves, which is an advantage, especially if the wear-protected liners need to be quickly changed (eg. after long use in processing corrosive or abrasive products).



Product movement between the kneading elements of CONTINUA screws.



Barrel section with replaceable wear-protected liner.

For special needs, the CONTINUA can also be made with easily openable split barrel sections.
The sealing profiles of the CONTINUA screws have an inherent self-cleaning effect irrespective of the nature of the ingredients (powder, paste or granular). Furthermore, it achieves exact longitudinal mixing and uniform energy input and residence time. More than 2,500 extruders have been built by WP, based on this twin-screw principle, for a vast range of successful applications.

Sealing profile of the self-cleaning CONTINUA conveying and kneading elements.

WERNER & PFLEIDERER

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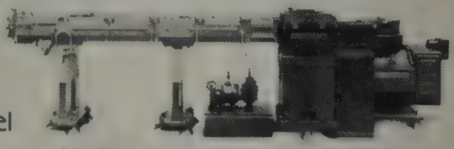
The user benefits from the great flexibility and rapid adaptability of the CONTINUA mixer/cooking extruder, especially if new circumstances require an easy and rapid change of process length or profile for new raw materials or material properties. You too can benefit from this advantage!

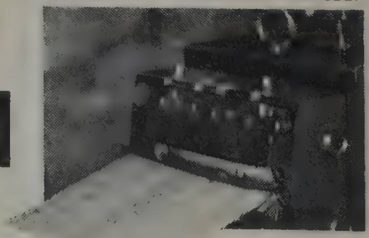


CONTINUA mixing and cooking extruder.

The CONTINUA range of machines covers output rates from 70 to 10,000 kg/hour, depending on the nature of the product, formulation and processing task.

Make use of WP's know-how. Test your ideas on the complete extrusion cooking pilot plant which can be demonstrated in Stuttgart. Please ask for further information and talk to WP's food product specialists.

Strip die for extrusion of flat bread.



WP-Food technology
04-1504/1

In PURE-PAK® cartons, all that gurgles is not milk.

Many different products (from soups to juices to ice milk mixes) go to market (and are helped to sell there) in Pure-Pak cartons. If yours aren't, they should be. Why?

Because Pure-Pak containers combine so many advantages.

Variety. Low-cost Pure-Pak cartons are available in different sizes, windows also, to meet most buyers' needs. They have won consumer acceptance worldwide.

Convenience. Pure-Pak cartons are lightweight yet strong. The pouring spout is easy to open, easy to close. They're drip-free, and sanitary.

Large printable 4-sided surface. You can print on Pure-Pak cartons to attract in-store customers. A strong visual impact can be achieved using a variety of printing methods, including Flexography. When your carton gets used at home, you're reaching people right when they're in the mood for food. All at the lowest direct merchandising cost-per-person you'll probably ever find.

Flavor protection. Contents are protected against light.

Renewable natural resource. Paperboard from trees is turned into one-way Pure-Pak cartons (which can also be recycled).

Licensees around the world. Our worldwide network of paperboard converters assure a consistent supply of container blanks from multiple sources.

Ex-Cell-O Corporation can supply you with Pure-Pak machines that form and fill 4 ounce to 1 gallon (125 cc to 4 liter) Pure-Pak cartons. Our Materials Handling Operations can provide systems that weigh, label, stack, case, convey, warehouse and distribute your products in Pure-Pak cartons.

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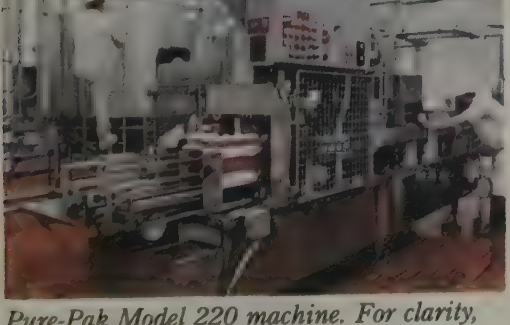
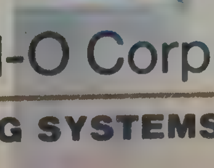


Pure-Pak Model 220 machine. For clarity, guarding may have been removed.



Ex-Cell-O Corporation

PACKAGING SYSTEMS DIVISION

Circle 66 on Inquiry Card

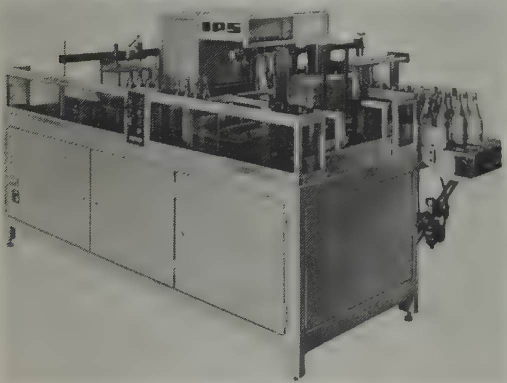
Tin/chrome thickness tester

Bottlers, canners, can-makers and tin mills can benefit from the economies of precisely-measured coatings of tin and chromium on their products. Three kinds of thickness testers are offered: The "Stannomatic," for tin coatings; the "Chromatic," for metallic chromium; and the new "Zincomatic" zinc and zinc-iron alloy tester.

The devices promise all the features you need to control and assure quality in your products, processes and purchases. Some key features: The testers are automatic, both hard-copy and digital readouts, simultaneous reading of two faces, easy operation even by unskilled workers. Accuracy is ±1% with ±0.5% reproducibility; the method is Coulometric.—*Products Distribution Service, Wilmette, Illinois, U.S.A.* **Circle 185**

Specialized wrapping

This tray packer accommodates both round and square products, such as bottles, cans, boxes and the like. These may be advantageously assembly-packed on a tray, possibly using subsequent shrink-packing. The machine may be adjusted continuously-variably to the special tray dimension required. It's offered with grouping and feeding systems, according to the product type and capacity.

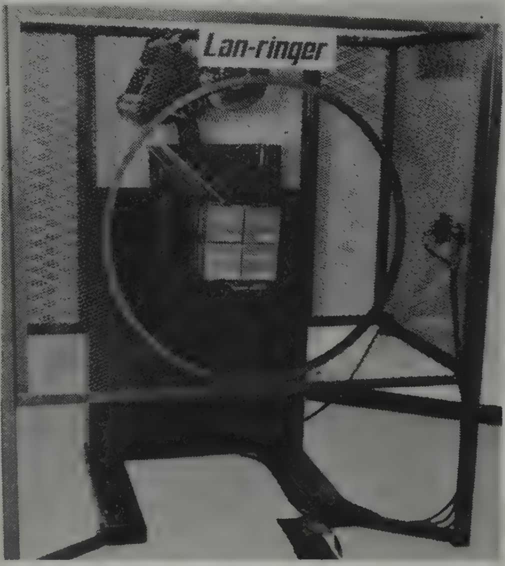


The grouped packing pattern is automatically transferred to a cardboard sheet that is then formed into a tray around the unit. The sides are glued together using hot-melt. As operation occurs at one level only, there's the gentlest handling of individual products.

Capacity is up to 25 units/minute (depending on product). Power supply is 5 kW maximum.—*IPS Packaging AS, Toma, Denmark.* **Circle 186**

Low cost stretch-bundler

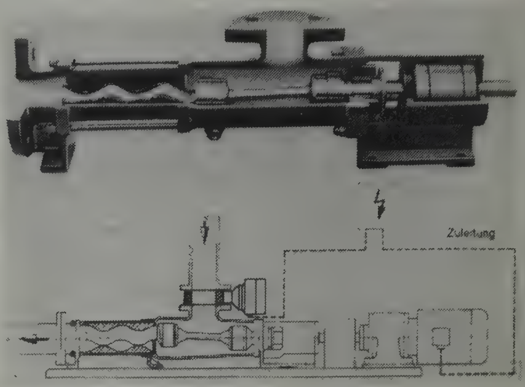
This "economy minded" stretch bundler wraps a variety of product sizes and shapes. Compared with strapping, tying or taping methods, the "mini Lan-Ringer" bundler provides strong product protection (six-sided, if needed) at lower unitizing cost. Reduced product damage is claimed, and packagers can use such master containers as bailer bags or corrugated boxes, to further trim costs.



Mechanical clamps (pneumatic are optional) hold product in a fixed position. The film roll is rotated around the product. The exclusive "Roller-Stretch" film delivery is standard, which is said to make this unit "the most economical stretch bundler available." The system is portable and needs only 110-V service.—*Lantech Inc., Louisville, Kentucky, U.S.A.* **Circle 187**

Widely versatile pumps

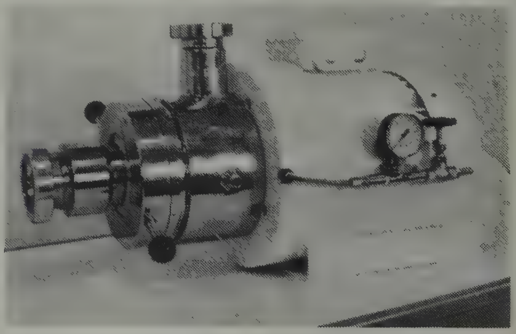
Plants processing low-viscosity fluids, as well as heavy and/or thick-pulpy fluids, will be interested in Mohno-Pumps. Because of their rotating, positive-displacement principle, the pumps' capacities depend on speed; each can be continuously adjusted to the need of product to be handled, either manually or automatically pre-set.



The pumps can be used with all kinds of drives. They are offered in capacities of merely liters, to as high as 250 m³/hour, with pumping pressures graded as high as the range of 24 bars. The pumps are offered in various models: Submersible, vertical with a mixing container, and quick-cleaning for certain foods. All can be produced in such materials as high acid-proof nickel-molybdenum-steel or titanium.—*Netzsch Mohno-Pumpen GmbH, Waldkraiburg, West Germany.* **Circle 188**

Speedy colloidal mills

The Brogli firm distinguishes between three types of colloidal mills. The vertical mill, for one, offers a hopper and a distance between rotor/stator that can only be adjusted when the hopper is turned with the stator.



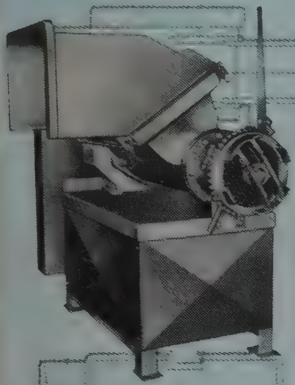
In its horizontal construction, the machines are fitted with an intermediate piece, and the distance between the rotor and stator (and, also, the homogenizing effect) can be adjusted while the in-line colloidal mill is running. Thus, the fitted pipes need not be disturbed with this model.

(Continued on page 98)

WEILER PROCESSING EQUIPMENT

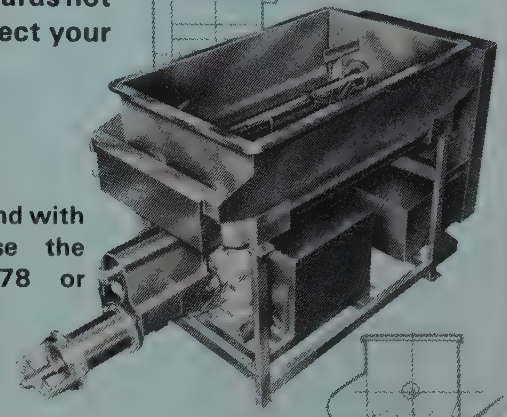
★ WHERE DEPENDABILITY IS IMPORTANT ★

Enhance your meat processing system with some of the most rugged and dependable equipment in the world. Take advantage of WEILER customized service and time-tested heavy duty construction to give you the kind of performance you need. All at reasonable prices, and U.S.D.A. Approved. NOTE: Product inlet and outlet guards not shown. In certain applications appropriate guards will be necessary to protect your employees from possible injury and can be fabricated to your specification.



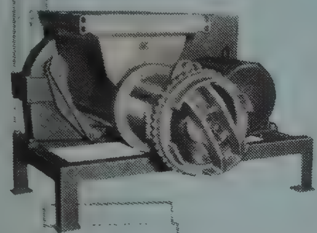
★ FROZEN BLOCK GRINDERS

For pre-grind operations, this 100 HP 16-inch Model 1675 will grind 0°F, 80-lb meat blocks up to 9 inches thick to 1-inch reduction size at a rate of up to 240 pounds per minute.



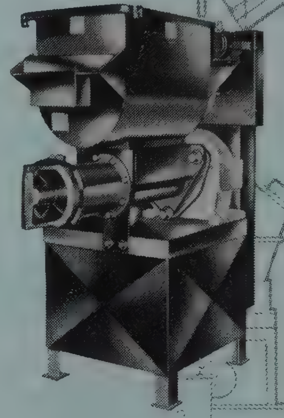
★ MIXER-GRINDERS

If you wish to mix and grind with the same machine use the WEILER Models MG878 or MG1109. Superb paddle type mixing system. Available with tub capacities to 59 cubic feet.



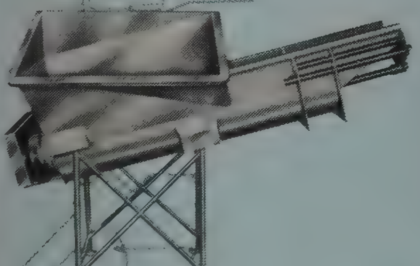
★ FAT & BONE GRINDERS

11 and 16-inch models, ideal for size reduction in fat rendering operations and by-product plants, including limited poultry, pork and beef bone reduction.



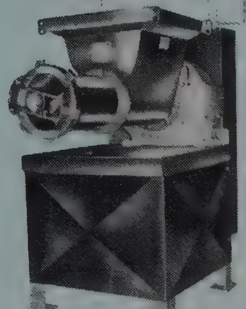
★ SELF-FEEDING GRINDERS

For fresh or tempered pre-ground meats, the Models 878AG or 1109AG can really smooth out your product flow. Heavy duty construction with added surge capacity up to 20 cubic feet.



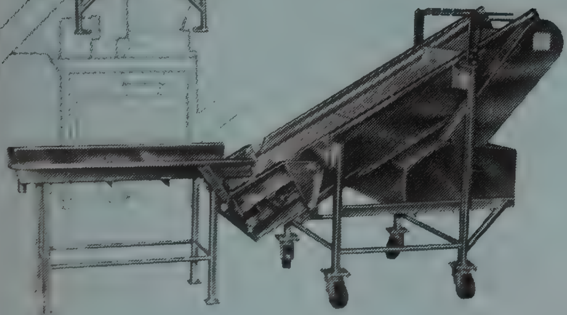
★ COLLECTING BIN CONVEYORS

Accumulate product or keep it moving with the 16-inch Model SC16. Ideal for use with large vat dumpers and to feed high-production grinders. Excellent for large meat trimmings or preground meats. 33 cubic feet surge capacity.



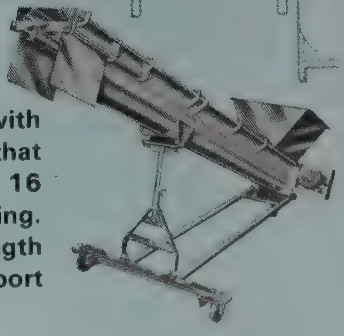
★ CONVENTIONAL MEAT GRINDERS

Grind almost any kind of meat or meat by-product, thawed or frozen. Many different models with plate diameters from 6 to 16 inches. Fabricated steel construction with spring loaded knives for cooler cutting. Customized for *your* jobs.



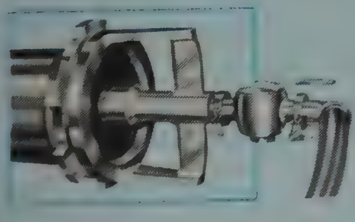
★ FROZEN BLOCK CONVEYORS

Lift up to 80 pound meat blocks easily. Available in any practical length, inclined or horizontal.



★ SCREW CONVEYORS

And — keep it moving with WEILER screw conveyors that have extra heavy 6, 9, 12 or 16 inch diameter screw flighting. Available in any practical length on fixed or portable support frames.



★ BONE COLLECTOR

Use it on your Weiler 6-inch, 8-5/8-inch and 11-inch grinders. Retrieve stray bone chips, cartilage and gristle on a continuous basis. Gives you higher quality ground meat products.

★ For more details, please send for our free equipment catalog. ★

WEILER *and Company*

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Telex 265442

E4

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Almonds?

We grow more of them. Berrenda Mesa Farms is the world's largest almond grower. So you know you can count on us.

We're consistent—plump, crisp, delicious almonds everytime, because we plant, grow, nurture and harvest our own. And quality control is our middle name.

Oh, they're fresh. Our plants are equipped with the most modern processing and packaging machinery.

They come in lots of shapes and sizes. No one offers you more varieties than Berrenda Mesa Farms.

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You get free expert advice. For the past six years, 98% of our business has been almonds. No one can answer your needs better.

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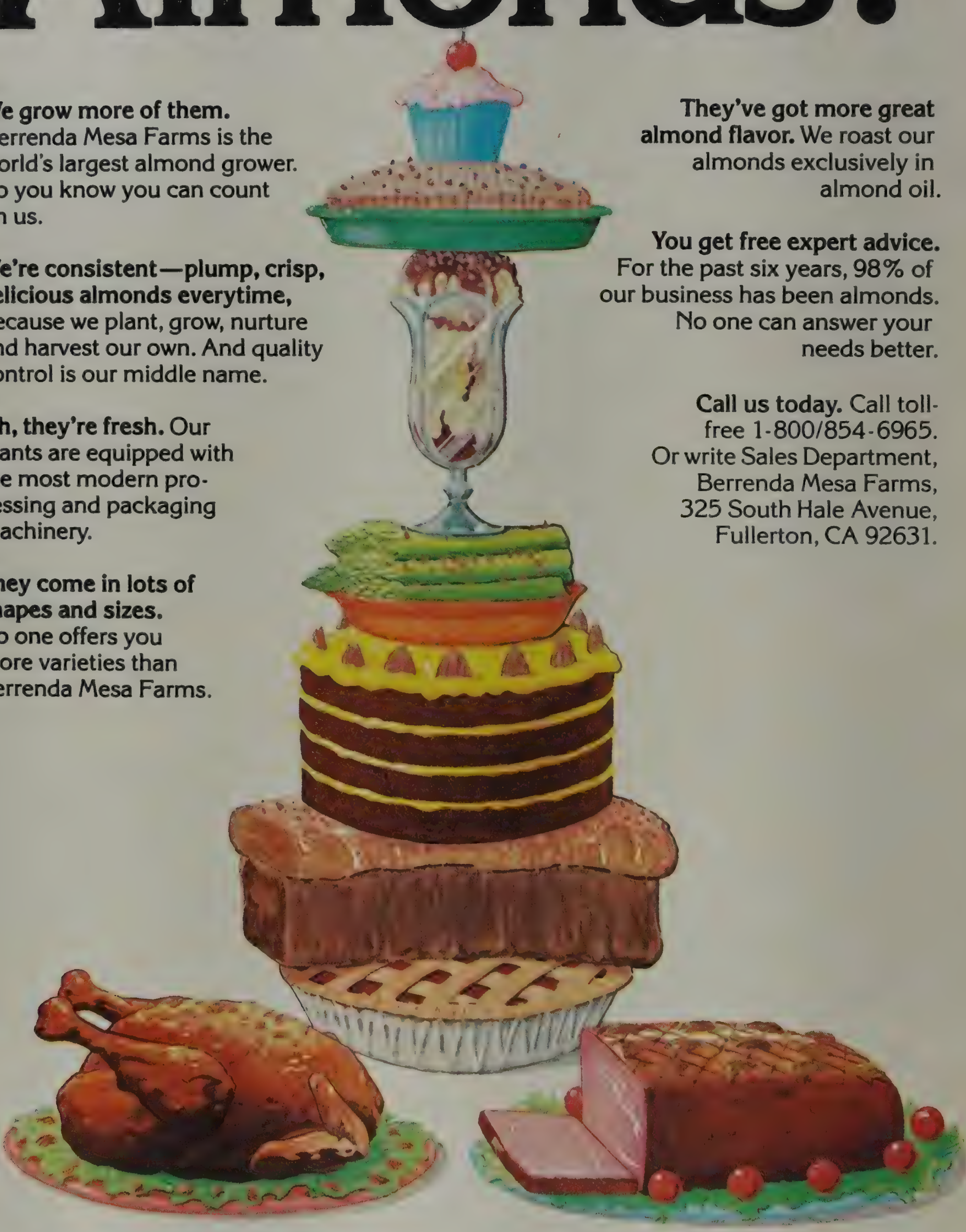

Berrenda Mesa Farms™

The World's Largest Almond Grower.

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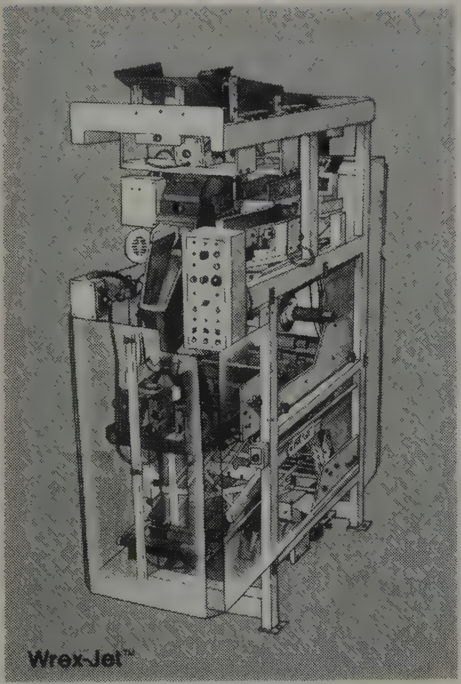
WE'VE BEEN A LEADER SINCE 1893.

In fact, we're one of the oldest American manufacturers of packaging machinery. And we didn't get to be a respected company in this business by being a follower.

For the past 88 years, we have consistently been a leader in engineering innovation to meet highly specialized packaging needs.

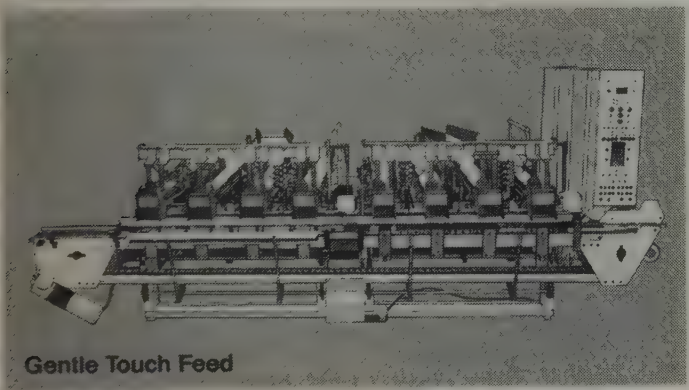
Our all-new **Wrex-Jet**™ with Micro Processor is engineered to put good things in small packages—potato chips up to 71 Grs. (2½ ounces) and other snacks up to 113 Grs. (4 ounces).


Wrex-Jet™

The machines shown are some of the latest developments by Rexham International to meet specific needs within specific market areas.

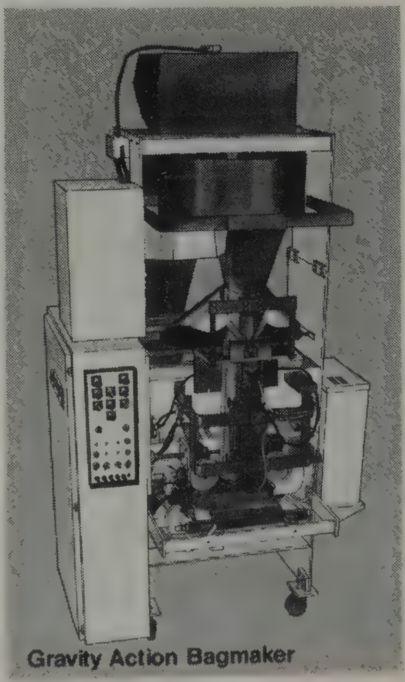
If you'd like more information on these and/or other Rexham packaging machines or have a unique packaging problem, get in touch.

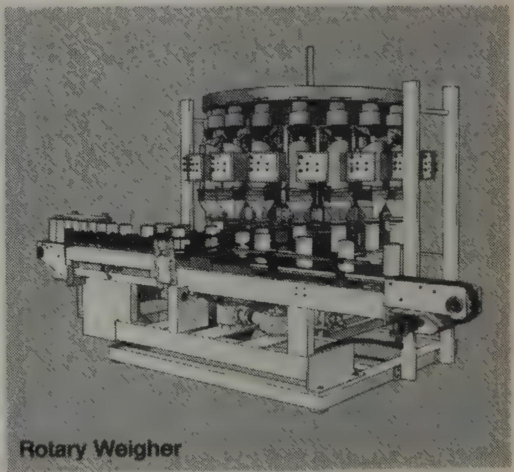
We'll tell you how Rexham engineers can put your operation on the right track toward economy and efficiency with a machine designed for your needs.


Gentle Touch Feed

Rexham's **Gentle Touch Feed** is engineered to handle mushrooms with a minimum of bruising and abrasion. And it's adaptable to other delicate products.

The **Gravity Action Bagmaker** is designed to handle heavy and bulky products in large bags. The actual bag is formed with the assistance of gravitational force acting on the product.


Gravity Action Bagmaker


Rotary Weigher

Modular design sets our new **Rotary Weigher** apart. This innovation allows the assembly of a system to meet specific requirements at minimum special engineering costs. Also, it permits quicker changes in container sizes.

Rexham International, Inc.
P.O. Box 3811 Durham, North Carolina, U.S.A. 27702
Telephone: (919) 682-8161 TWX: 510-927-0925

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Circle 69 on Inquiry Card

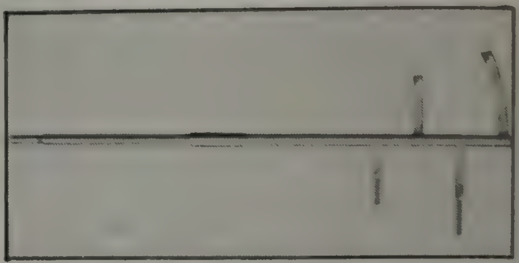
Also offered are colloidal mills with double working seals with a closed-water circulation system for cooling, counter-pressure and continuous cleaning.—*Brogli & Co. Ltd., Therwil, Switzerland.*

Circle 189

Zirconium ends problems

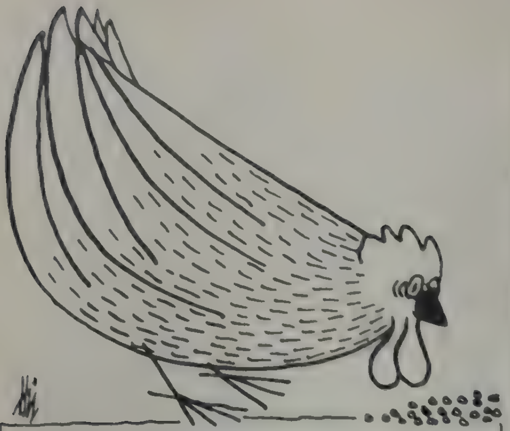
Through fusion with HCl, the protein content of various raw materials is converted to amino acids. With the correct heat supply, this process takes place in the excess-pressure area, requiring pressure vessels. These hydrolysis autoclaves (7,000 liters) are fitted with stirring devices.

Special acid protection is needed for all components contacted by the HCl—and this protection has been very expensive. The search for economic solutions led, via ceramic linings and furane resin coverings on stirring equipment to the present stage of development. Pressure vessels are lined with physiologically-perfect rubber, while the gland casings (since 1974) and the stirring equipment (since 1975) are protected with zirconium coatings.



In the past, because of the relatively brittle acid-protection materials, gland casings and stirring devices required frequent repair. Now, using zirconium, the problem has been licked. And, says the supplier, because of the economies of zirconium sheets, "it is only a matter of time" until zirconium cladding will replace brick-lined vessels.—*Friedrichsfeld GmbH, Mannheim, West Germany.*

Circle 190

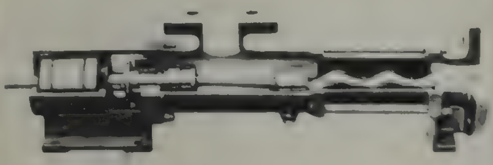


Just choose for us your difficult pumping problems.

With our 25 years' old experience in construction, in using and further development of the MOHNO-Pump we would like to help you to solve your problems.

We have — and we think this is in the interest of our customers — specialized entirely in this pump kind and therefore can concentrate on whole efforts to it.

MOHNO-PUMPS



- rotating positive displacement system
- self-priming up to 8.5 m
- no valves
- careful handling
- capacity depending on speed up to 250 m3/h
- pressure heads up to 25 bars
- viscosity up to 1.000.000 cP
- in all usual pump materials
- in industrial or food execution
- stationary or movable
- dry-running protection devices
- adjusting devices for worn-out stators

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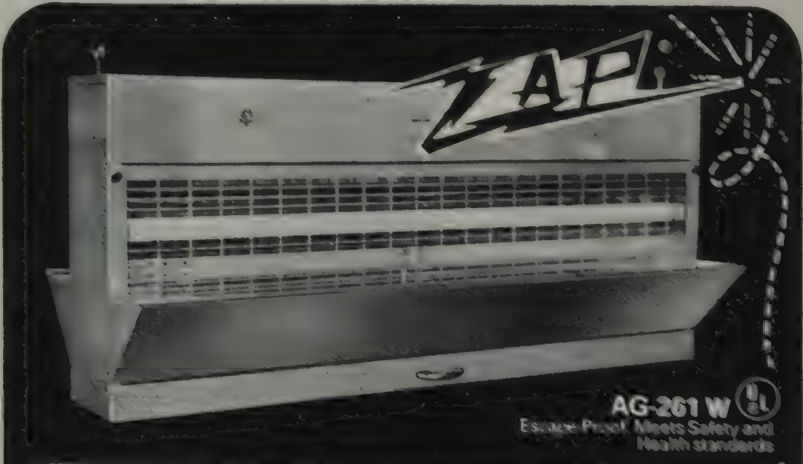

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Positive control of flies and flying insects on a 24 hr. basis, day-in, day-out. Minimum operating costs. RUST-PROOF aluminum construction. Fully automatic. No deadly poisons. No "down-time" for expendable manpower-consuming expensive temporary sprays. No residual chemicals. No odors. Clean and safe. Insects never become immune to electricity. Runs on standard 120V. Costs only pennies per day.

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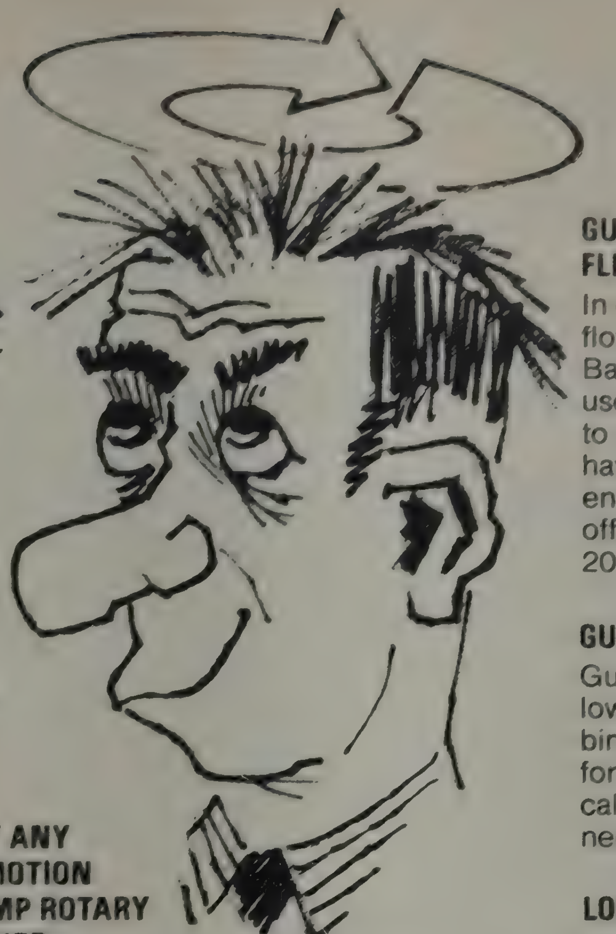
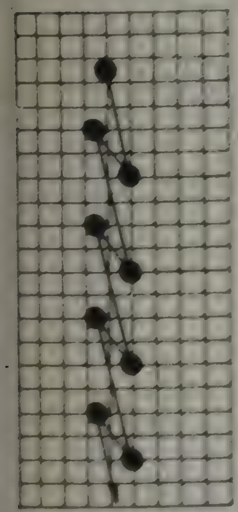
We're holier than they...



COMPARED TO WHAT ANY OTHER SCREENING MOTION CAN OFFER, OUR GUMP ROTARY SCREENERS ARE HOLIER

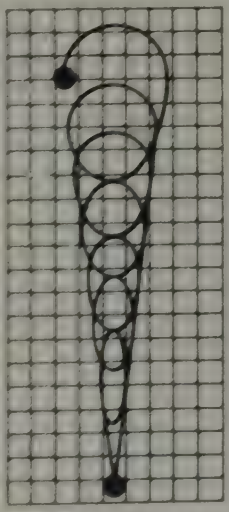
That's fact. Not because our screens have more holes, of course. We work with the same meshes as all our competitors. But our truly rotary, truly horizontal motion utilizes 100% of the screen—not just a portion of it. Particle exposure to screen openings is maximized and the resultant benefit is most accurately expressed in the two words that mean the most to you: Thruput and Efficiency.

Because the screening motions available from our competitors severely reduce screen utilization, their thruput and efficiency are significantly less. While Vibratory is the least efficient (as explained with schematic A), Reciprocal/Rotary (schematic B) also presents considerably less screen to the particle than does the Gump 100% rotary, 100% horizontal motion.



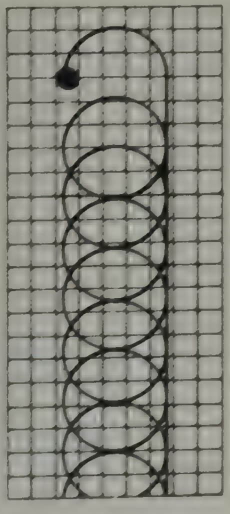
VIBRATORY

As the particle* bounces up and down, the screen moves back and forth. The particle spends much of the time suspended or missing the holes.



RECIPROCAL ROTARY

Starting out rotary and ending reciprocal presents fewer and fewer holes to the particle* as it progresses down the screen.



ROTARY

100% rotary, 100% horizontal motion uses 100% of the screen 100% of the time—means that each particle* has the maximum number of opportunities for passage.

*Can be the recovered product or rejected material.

GUMP SCREENERS OFFER UNEQUALLED SCREENING FLEXIBILITY

In competitive multiple screen sifters, there are two basic flow arrangements possible: Series or parallel. In a Gump Bar-Nun, the most flexible sifter in the industry, you may use series, parallel *or a combination of both* to provide up to six separations. Comparatively, reciprocal/rotary units have a fixed flow pattern of "in-one-end-and-out-the-far-end"—a design which requires additional floor space and offers only single function separating. (Our catalog details 20 configurations—available upon request.)

GUMP SCREENERS USE LESS ENERGY

Gump's much lower ratio of weight to screen area means lower power requirements. The unique Gump design combines support and drive mechanism—eliminates the need for a separate massive support structure. Where reciprocal/rotary screeners may require up to 10 h.p., a Gump needs only 3 h.p. (see table).

LOW PROFILE GUMP SCREENERS SAVE SPACE

Headroom is sometimes a factor in screener selection, but if there's space for a floor-mounted unit a Gump will fit—usually where no other comparably-sized screener will. The following example is a case in point, and even though other head-to-head comparisons will vary, the basic relationships apply:

Model	Total Screen Area	Weight	Head-room	Floor-space	HP
Gump 484MB	76 ft²	2,700 lbs	41½"	35 ft²	3
Rotex 721	80 ft²	11,700 lbs	62½"	156 ft²	10

(Don't take anyone else's word for it—check all the data.)

GUMP PROVIDES POSITIVE SCREEN ATTACHMENT

It's not the "quick-release" variety of screen attachment. Gump believes in positively attached, heat-sealed screens. Gump users (of which there are a great number in widely different fields) are very attached to the design. They enjoy the secure screen approach with its simple replacement feature.

GUMP CAN ASSURE PERFORMANCE BEFORE YOU BUY

In our test facilities we begin with a screen analysis—either provided by you or determined by us. We then run an appropriate quantity of your product through the laboratory screener using the mesh or meshes that will give the desired separation(s). The thruput rate and screening efficiency are then equated to assure you of the performance you need.

Get all the facts from the industry's leader.

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FLAT-FLEX WIRE CONVEYOR BELTS FOR ON THE MOVE PROCESSING
Unique flexible design with sprocket non-slip drive.

INTRALOX NON-CORROSIVE NON-METALLIC BELTS
Ideal for foods and general conveying, also ribbed version for cans, bottles or cartons.

COMPACT POWER TURN UNITS
90° or 180° Flat-Flex hygienic self powered units transfer products round corners in perfect alignment.

Our systems feature positive sprocket non-slip drive with optional flighted or special purpose belts

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The economical tight-relay shutoff, especially important to the gas industry, cuts steady-state air consumption to as low as 3½ scfh (0.09 m^3/hour). It is claimed that this contrasts sharply with the 20 scfh capability of most controllers currently available.

The 4195 Series shown here is mounted to a control-valve actuator. It features few parts, easing problems of maintenance, parts' inventory and the like.—*Fisher Controls Co., Marshalltown, Iowa, U.S.A.* **Circle 175**

Versatile tilting blender/mixer

Many world markets have been found and others are being sought for this commodious tilting blender/mixer from Australia. The machine can mix up to 100 kg of meat in about three minutes. It is also versatile, in that it can be used for other kinds of mixing, such as salads, breadcrumbs, flour and spices. It is becoming popular among such users as continental butchers, processors and caterers.

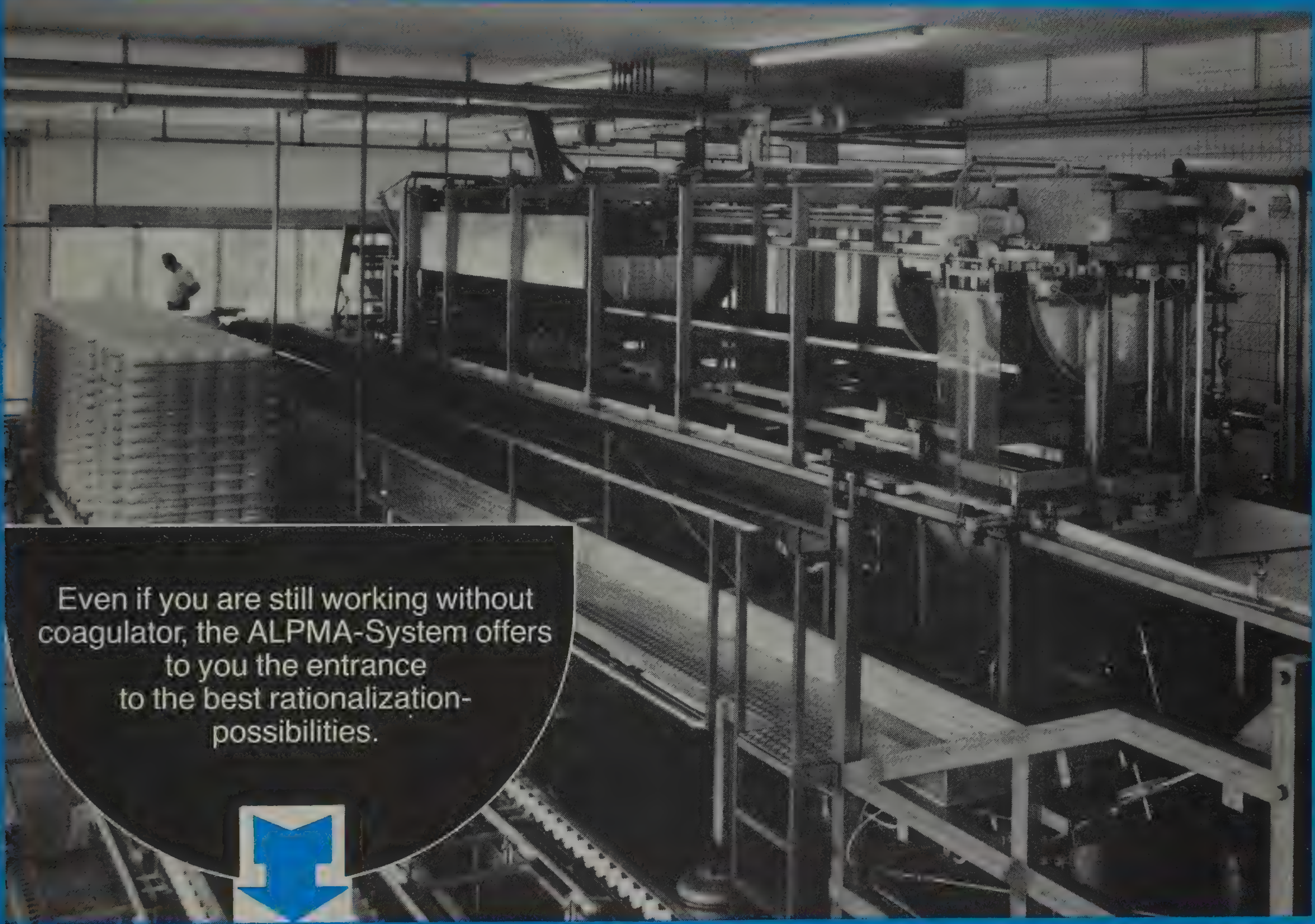
The 230 kg machine is stainless steel, polished and rust-free. There are no corners or cracks to harbor bacteria. For safety, its mixing paddles stop when the lid is raised. Motor and gearbox are fully covered. The stainless bowl measures 600-mm wide, by 600-mm high by 600-mm deep. Floor area needed is 1,075-mm wide by 800-mm deep.—*Nolex, P.O. Box 21, Western Australia 6051.* **Circle 176**

ALPMA

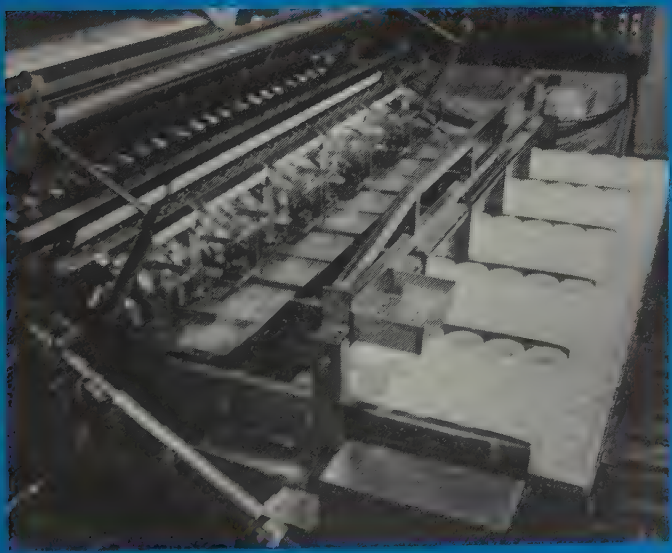
We are offering experience and most up-to-date technology for the running of most rational installations

The ALPMA-Coagulator renders possible to produce continuously Cottage Cheese up to semi-hard cheese with very high yields.

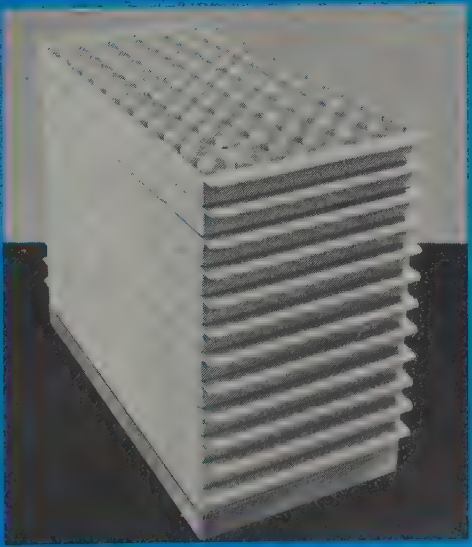
The continuous curd-production by the ALPMA-Coagulator



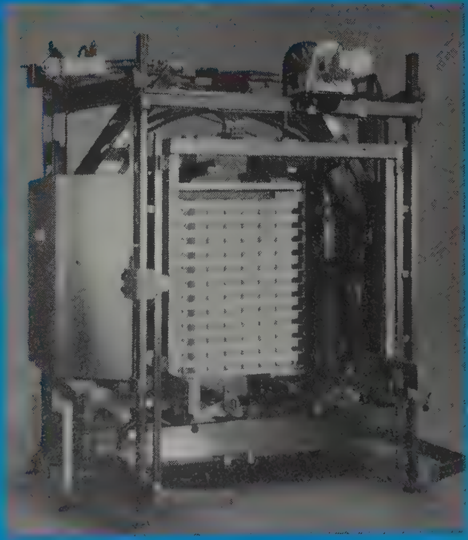
Even if you are still working without coagulator, the ALPMA-System offers to you the entrance to the best rationalization-possibilities.



Portioning



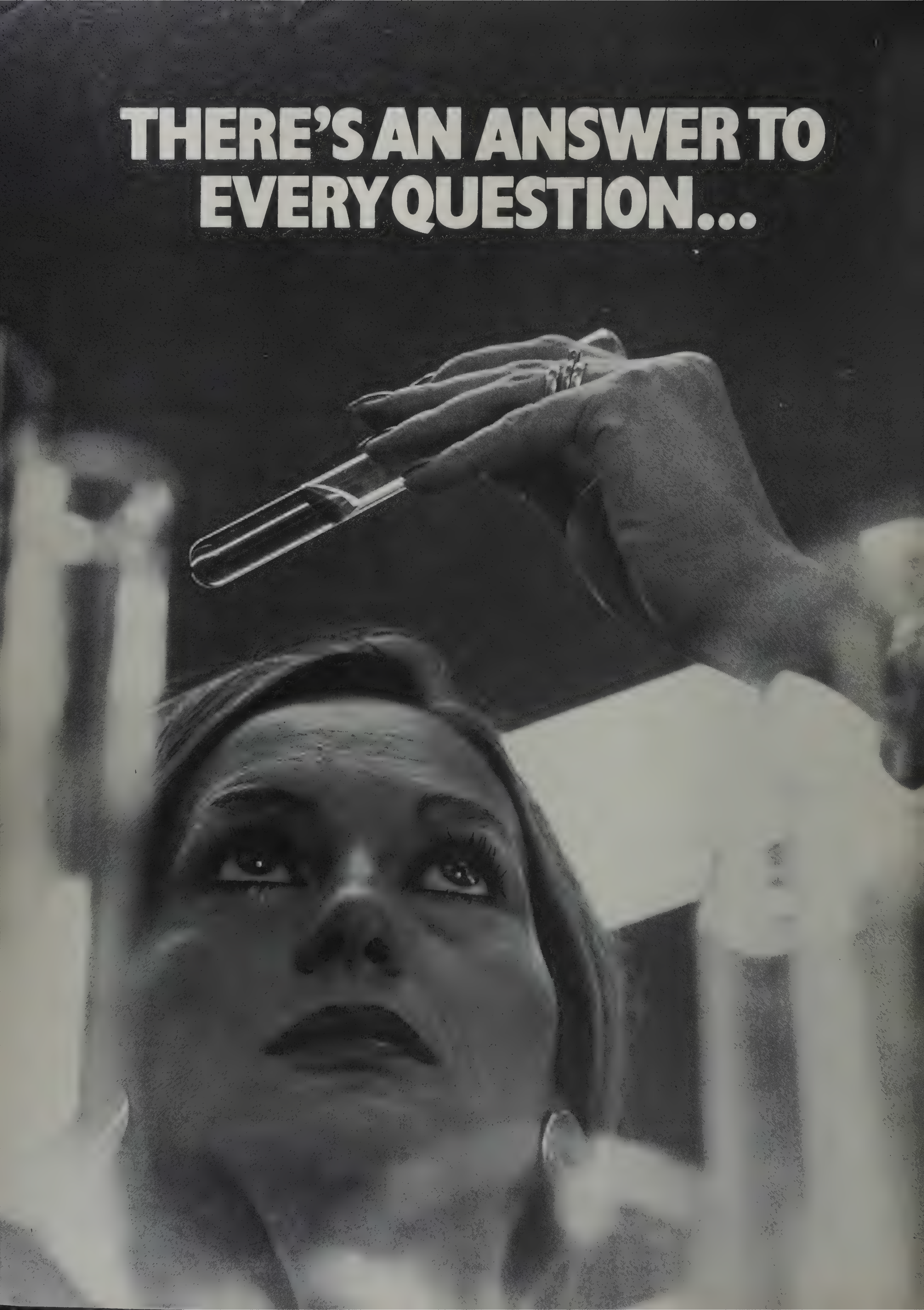
Blockforms



Turner

ALPMA Hain & Co. KG · D-8093 Rott/Inn · W.-Germany

Circle 75 on Inquiry Card


THERE'S AN ANSWER TO EVERY QUESTION...

IF YOU KNOW WHERE TO LOOK FOR IT.

When a difficult question arises, the knowledgeable person either knows the answer, or where to look for it. And, when it comes to know-how about the application of milk derivatives, the really knowledgeable person looks to DMV. DMV, as the world's leader in this field, puts vast amounts of finance and scientific effort annually nto research and development . . . and has the high international reputation that proves it.

DMV

A large Dutch organization, well-known, worldwide for its milk-based products and advanced developments in milk derivatives for the meat and food processing industries. And, for top quality lactose for pharmaceuticals and baby foods. Products made from fresh, pure Dutch milk.

IDEAS

At DMV, well equipped laboratories turn the ideas from fertile minds into future applications. Scientists and food technologists work unceasingly; satisfying the current needs and anticipating the future demands of the food processing industry. A vast bank of accumulated know-how is available to every customer . . . at DMV.

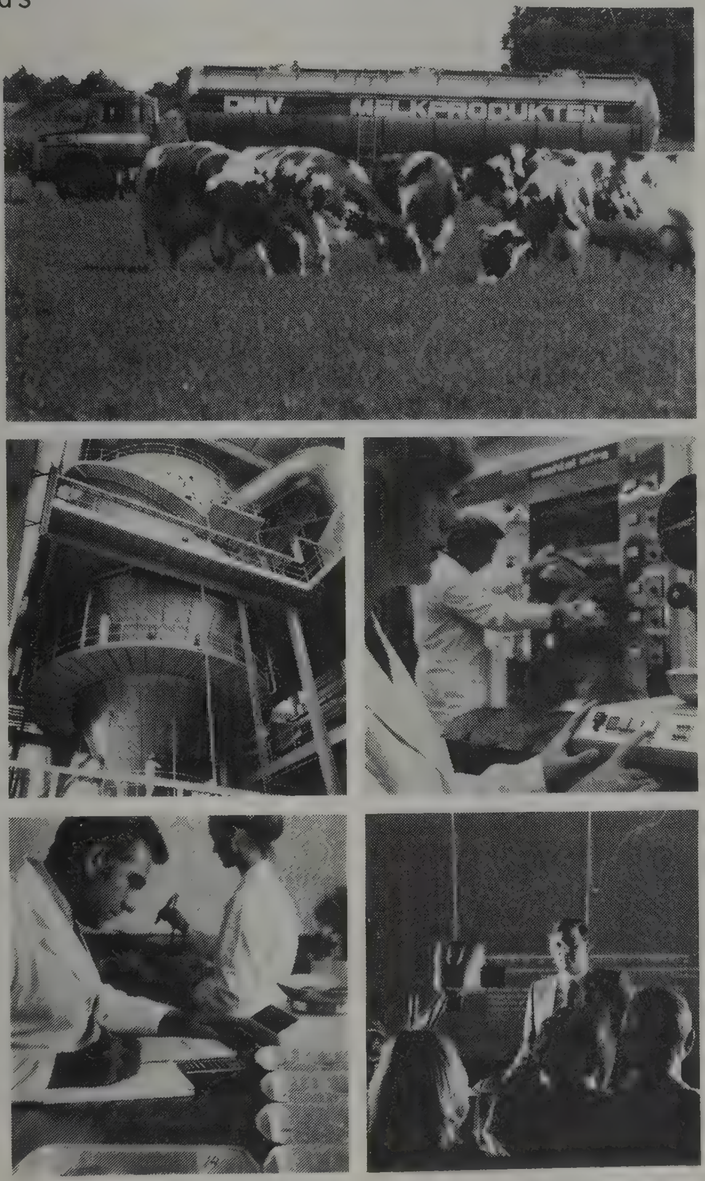
CONTROLS

Not only DMV's processing methods are continuously under review, but also the production methods used throughout the food processing industry.

At DMV itself, sharp controls are carried out right down the line. Spot checks supervise the raw materials used, and go on to check the recipes and final products. A high level of product quality is continuously maintained . . . at DMV.

ASSISTANCE

DMV doesn't keep its know-how to itself. Experts are ready to assist any customer or potential customer. Individually, at DMV's modern applications laboratory, or collectively at seminars or in group sessions anywhere in the world. If you are really looking for a fruitful cooperation and the exact -quality and economy- answer to your particular question . . . Ask DMV.



INTERNATIONAL

DMV's international distribution and service network is properly geared to satisfy your local needs. A widening variety of new products and applications are fed by DMV into a world market, where DMV's share is constantly increasing. The world's meat and food processing industries know where to look for the right answers . . . to DMV!

SOME DMV PRODUCTS

Milk proteins roller dried

Emulsifiers and stabilizers for heated products: sausages, canned meats etc .....

Milk proteins spray dried

Instant calcium and other caseinates that improve consistency and enrich all kind of products including health, slimming, dietetic and geriatric foods.

Special milk derivatives

Topping bases, fat powders, milk & whey powders, coffee creamers. For the bakery, dessert, ice cream and confectionery industry.

Lactose

Hydrous & anhydrous; seeding and spray-dried lactose for direct compression in pharmaceutical products and in baby food.

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From fertile ideas to future applications.

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Circle 76 on Inquiry Card

Reliability throughout the Line: Bosch Packaging Machines.

Why non-chilled Cream will soon become big Business: The Servac 78 AS leaves the Cold Chain "standing".

The selling of fresh cream has always been associated with a sour "after taste". High distribution costs within the cold chain have limited its potential market and consumption. Bosch now brings a fresh breath of wind into the distribution of cream. With the Höfliger and Karg Servac 78 AS you can offer the consumer the true flavour of fresh cream without the need for the cold chain. Because this form-, fill- and seal-machine sterilises the packaging material, fills the UHT processed cream into accurately formed containers and then lids them. Safely and free from bacteria. A high quality product distributed safely and securely.

These advantages guarantee you a threefold penetration into the market.

In distribution: You can forget the cold chain. It makes no difference whether it is sweetened cream, whipping cream or sour cream. This gives greater economy due to lower costs. And greater competitiveness due to better pricing.

In merchandising: A previously unthinkable method of displaying cream products is now made possible by Bosch – they stand up on shelves. Or if the store so determines – at least these containers offer the full benefits of space-saving, cost-saving and ease of handling.

Stock availability and reordering are made significantly simpler, facts by no means of minor importance to the store.

The delicious taste of fresh cream can now become a profit earner.

For the consumer: Your product gains appreciably in consumer appeal.

The convenience for the user coupled with the benefits of trouble-free storage give the pack considerable consumer appeal.

Add to this the neat easy-open feature by means of the prescored lip, and the ability to pour cleanly through the specially moulded spout.

But this is by no means everything: with the Servac 78 AS you are also providing the consumer the taste of fresh cream out of a portion pack. Either singly or in multiple units. A new market ... one offering numerous possibilities. Economic, providing maximum material savings and easily disposable.

3 months guaranteed shelf life: Servac 78 AS. The Servac 78 AS operates with thermoplastic films and laminates and forms them into various container shapes with a maximum draw-depth of 100 mm. This makes it possible to fill up to 250 ml. The vast usable area of 550 x 205 mm at 25 operating cycles per minute ensures a superb output. Economic, providing maximum materials savings and easily disposable.

6 months guaranteed shelf life: Servac 78 AL/AS. This machine concept with a totally enclosed system forms aluminium foil laminates into containers up to 45 mm deep which are impervious to light, gas and aroma. This means double the shelf life and double the safety. Even after many months, fresh cream quality still comes to the consumer's table.

We would be pleased to show you how you can take advantage of this threefold penetration into the market. With the Servac 78 AS or the Servac 78 AL/AS you will anyway leave the cold chain "standing."

BOSCH

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Produktbereich Höfliger + Karg
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D-7050 Waiblingen
Telefon (07151) 5041
Telex 724310 hoka d/
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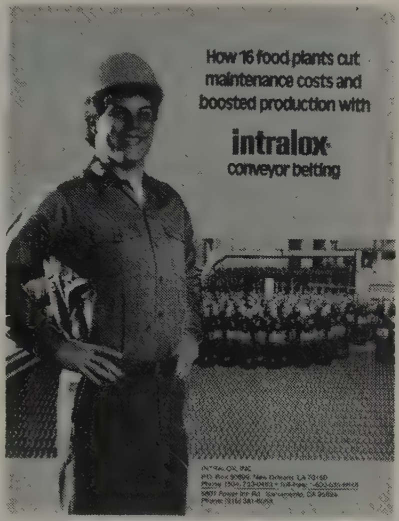
Dongowski & Simon

Literature / Literatur / Littérature / Literatura


How 16 food plants cut maintenance costs and boosted production with
intralox
conveyor belting

Literature and data sheet from Intralox tell how the all-plastic conveyor belting solved such problems as rusting, poor tracking, downtime and product damage commonly associated with other belt types. Included is information on six types of all-plastic belting plus molded-on cleats and unique transfer plates.—*Intralox Inc., New Orleans, Louisiana, USA.*

Circle 123

Analysis of sulfur dioxide in malt. Brochure describes how with the use of the Dionex Ion Chromatography, you can determine the presence of sulfur dioxide in malt. Analysis time is less than 18 minutes.—*Dionex Ltd., Surrey, England.*

Circle 124

Liquid-nitrogen cabinet freezer is described in brochure #6698. This compact double-door freezer offers smaller batch food processors and laboratories the benefits of full cryogenic freezing in minimum time.—*Liquid Carbonic Corp., Chicago, Illinois, USA.*

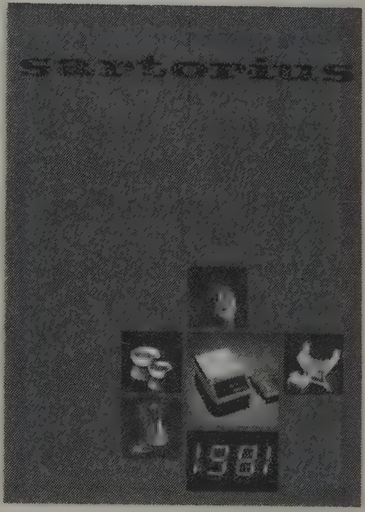
Circle 125

Computerized system for sterilizer monitoring, control and documentation is described in a four-color brochure. Covers the operation and capabilities of the equipment. Data sheet lists system components and complete specifications.—*Scientific Industries, Inc., Bohemia, New York, USA.*

Circle 126

Literature and data sheets from ITT Rayonier tell how vanillin is widely used in many food industry applications—chocolates, baked goods, ice cream, confections, etc. Vanillin is derived from lignin, the natural wood-fiber bonding agent in trees, and purified by an exclusive process resulting in the highest quality food-grade product.—*ITT Rayonier, Stamford, Connecticut, USA*

Circle 127


sartorius
1981

A comprehensive survey on this manufacturer of precision balances is described in a 40-page brochure available in English, German, French, Italian and Russian. Balance program ranges from 0.0000001 g to 60.000 g. The device and various peripheral instruments can be combined to establish weighing systems for numerous applications.—*Sartorius GmbH, Goettingen, West Germany.*

Circle 128

Bulky wastes can be dramatically reduced to easily-handled granular or shredded material, with volume reduction of 70%. Brochure describes how the Mono Muncher machine can accomplish that in the process industries, fuel saving, material reclamation & bulk reduction.—*Mono Pumps Ltd., London, England.*

Circle 129

Fully automatic, continually self-cleaning strainer enables the removal of solids as fine as 30 microns from fluids of most viscosities without backwashing. Brochure describes the full-line of automatic, mechanically self-cleaning strainers.—*CE Bauer, Combustion Engineering, Inc., Springfield, Ohio, USA.*

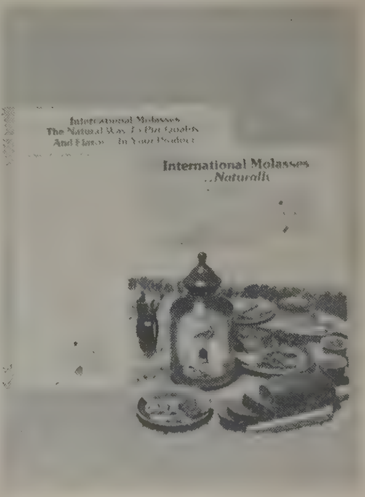
Circle 130

Mixing, blending, feeding and odor control systems are featured in a 12-page process equipment bulletin #PE-103. Air pollution control systems for odor abatement and removal of gaseous contaminates are also described.—*Beardsley & Piper, Chicago, Illinois, USA.*

Circle 131

Suggested applications in a wide variety of foods, and a discussion of the role of molasses in flavor, color, texture and shelf-life, are featured in a full-color flyer. Manufacturer carries a full line of liquid molasses, but will custom blend to meet your specifications.—*International Molasses Corp., Rochelle Park, New Jersey, USA*

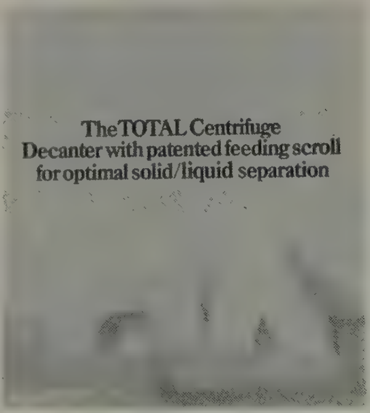
Circle 132


International Molasses
...Naturally

Literature / Literatur / Littérature / Literatura

Decanter-centrifuges with patented feeding scroll for optimal liquid/solid separations are described in brochure. Possible applications for decanter centrifuges are: Waste water treatment, recovery of raw material, reduction in transportation costs and energy savings.—*Grenaa Vaerk A/S, Copenhagen, Denmark.*

Circle 133


The TOTAL Centrifuge
Decanter with patented feeding scroll
for optimal solid/liquid separation

A wide range of package plants for research, development projects and small scale production are described in brochure. Manufacturer provides through its worldwide office network an efficient after-sales service.—*Niro Atomizer, Soeborg, Denmark.*

Circle 134

Rotary airlock valves are detailed in brochure. Valves are used for conveying, metering and feeding dry bulk materials. It provides information and specifications on three basic types of valves—drop through, blow through and side entry—for pneumatic conveying.—*Semco, Inc. Houston, Texas USA.*

Circle 135

Brochure highlights the features of the SUREFLOW™ 900E Series thermoform, fill and seal packaging machine systems. System features include versatility in package styles, shapes and quick-change tooling. Brochure also contains technical information with diagrams, specifications and performance data.—*Mahafy & Harder Engineering Co., Totowa, N.J.*

Circle 136

Food Analysis. Report groups information for analysis of inorganic compounds, organic compounds, gaseous oxygen, and moisture. It shows the use of modern instruments, including ion-selective electrodes, high performance liquid chromatography, ultraviolet/visible spectrophotometers, infrared spectrophotometers and oxygen analyzers in food analysis.—*Beckman Instruments, Inc., Irvine, California USA.*

Circle 137

Full line of continuous processing equipment and complete engineered processing systems for the food, confectionary industries are featured in a 12-page mini-catalog.—*Groen Division, Dover Corp., Elk Grove Village, Illinois, USA*

Circle 138

A wide range of industrial dryers for the chemical and process industries is featured in brochure.—*APV Mitchell Dryers Ltd., Carlisle, England.*

Circle 139

Microprocessor filling system. Bulletin details the company's microprocessor filling system that simplifies both net weighing and form-fill-seal operations. Called System Twenty-One, this system uses multiple microprocessors to handle all key functions. The system features fast and accurate digital control.—*Triangle Package Machinery Corp., Chicago, Illinois USA.*

Circle 140

Fully automatic bag slitter designed to open all types and grades of pressure and non-pressure packed asbestos, is described in this colorful borchure. A fully enclosed system reduces atmospheric contamination.—*Bel-Tyne Company Ltd., Stockport, England.*

Circle 141

Coding, dating, price marking and printing machine is described in brochure. System is designed for use in conjunction with any high-speed intermittent or constant motion, overwrap, form-fill-seal, bag making or slitter. Up to 350 imprints/minute can be accomplished.—*Bell-Mark Corp., East Orange, New Jersey, USA.*

Circle 142

High temperature/high pressure process pump is described in this 14-page brochure. Outlines the design features of new product and typical services. Also included are sectional view of the product and seal flexibility performance curves, parts' list and construction materials.—*Gould Pumps, Inc., Seneca Falls, New York, USA*

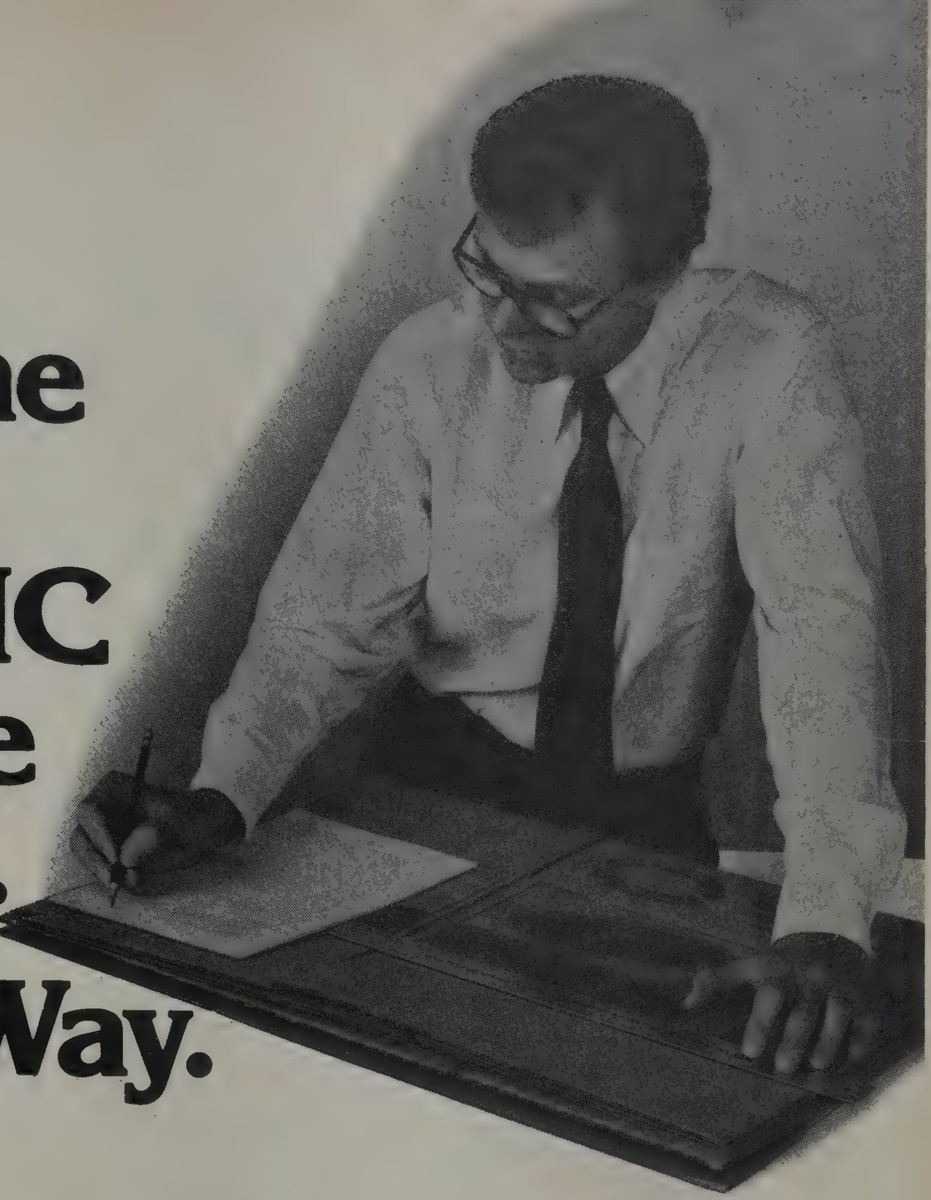
Circle 143

Sample conditioners for pyrolysis gases are described in catalog. Simplicity of operation, ease of maintenance and reliable performance in a variety of industries are some of the applications.—*Fluid Data Inc., Merrick, New York, USA*

Circle 144

Cleaning-in-place programmable systems is described in French brochure. Manufacturer offers guidance, know-how and personalized systems.—*Pierre Guerrin, Mauze sur le Mignon, France.*

Circle 145



Give your cases the benefit of the doubt with FLEX-MATIC the versatile case former.

From New Way. Naturally.

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Positive Case Control

But that's only part of the Flex-Matic story. Consider control. The compact Flex-Matic features an advanced "V-Belt" design that provides positive case control through all forming stations, including discharge. The result: higher forming speeds (up to 30 cases per minute). And fewer "hang ups."

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And when it comes to bottom sealing, Flex-Matic gives you complete flexibility. Use hot melt. Cold spray. Even pressure sensitive tape. With Flex-Matic, the choice is yours.

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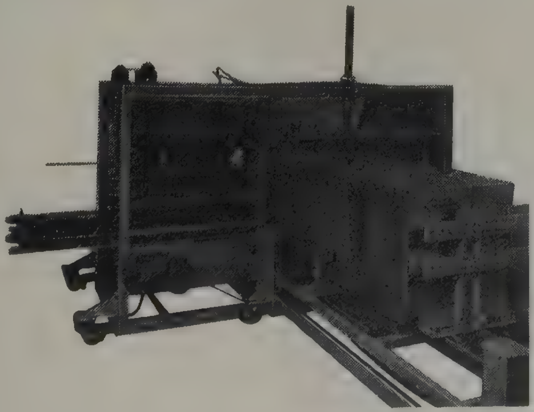
If you'd like the complete story on Flex-Matic or any of the other products in the New Way line — including labelers, case sealers, automatic casers, cappers, accumulators or complete turnkey systems — simply complete and return the coupon below. Or, better yet, call us direct at (717) 637-2133.

*Oversize machines are also readily available.



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Literature / Literatur / Littérature / Literatura

Fondu calcium aluminate cement is described in brochure. Fully illustrated brochure provides data on setting and hardening, aggregate, additive, mixing, placing and curing requirements. Other sections detail the product's chemical composition, mechanical specification and resistance characteristics.—*Lone Star Lafarge, Inc., Norfolk, Virginia, USA.* **Circle 146**

Uniform pressure-sensitive case sealer is described in a two-color specification sheet No. 0281-1. In operation, sealer applies a single strip of pressure-sensitive sealing tape to both top and bottom of a box simultaneously, and the securely-sealed box is automatically discharged. If a different size box is to be sealed, the machine can be easily adjusted within seconds.—*The Loveshaw Corporation, Deer Park, New York, USA* **Circle 147**

Materials-handling equipment for the agricultural and process industries are described in brochure.—*Material Control Engineering Ltd., Chipping Norton, Oxon, England.* **Circle 148**

Bulletin #250.81 from Gaulin Corporation discusses how homogenization affects emulsions and dispersions' processing. It also describes a full-line of high-pressure homogenizers and pumps, low-energy hydroshear systems, high-capacity and positive displacement pumps. Offers customer product-testing lab services.—*Gaulin Corporation, Everett, Massachusetts, USA* **Circle 149**

Complete processing systems for prepared, frozen and convenience meat, vegetable, seafood and specialty products are described in brochure. Pilot lab product testing is also available.—*Heat and Control, Inc., South San Francisco, California, USA* **Circle 150**

Vacuum packaging system expressly designed to eliminate container damage while processing paté is described in brochure. System permits the paté crocks to be gently moved along, without any damage.—*Teepak, Chicago, Illinois, USA.*

Circle 151

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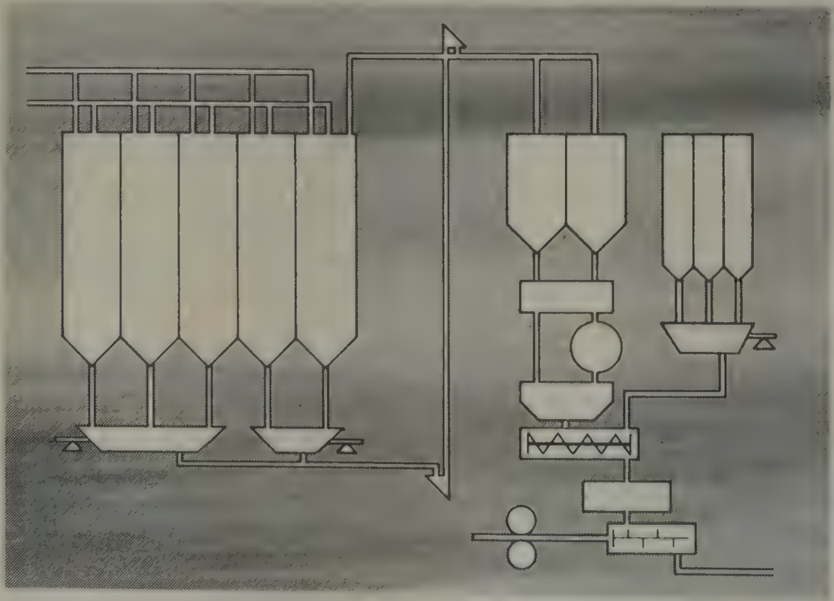

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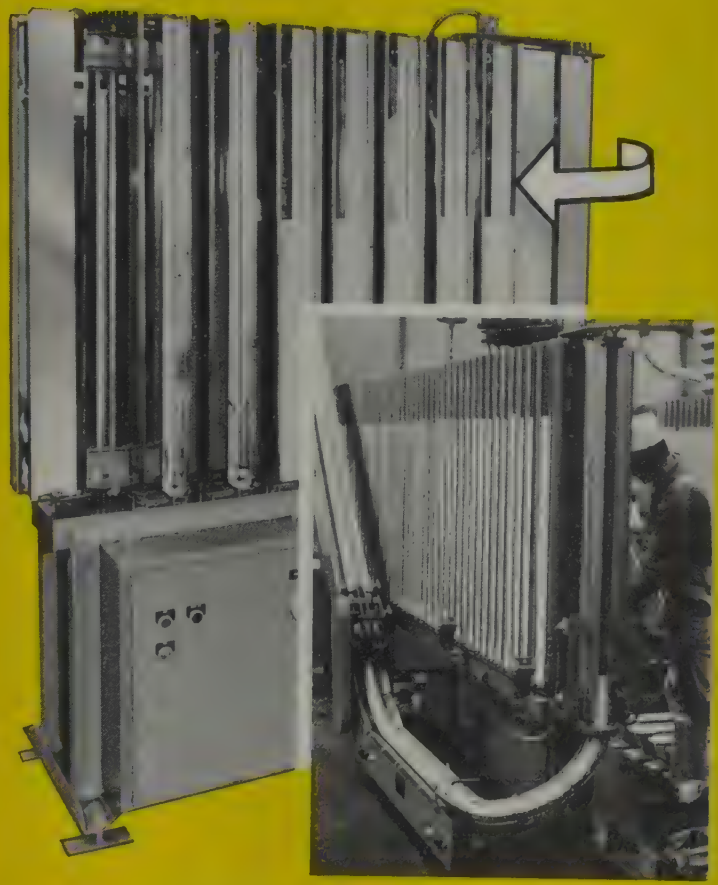
Double your feeding capacity for plastic lids, tubs and can ends!



Now . . . you can drastically reduce feed operator costs up to 50% or more! Fleetwood's unique "Rotofeed" system provides a large moving inventory of plastic tubs and lids to filling machines or metal can ends to seamers. One operator can now feed two or more machines. Pocket loading offers excellent visual inspection. Versatile design can be varied to accommodate a wide variety of lid and tub profiles. Low cost Rotofeeders offer fast payback! Ask for brochure RF-3.

Fleetwood Systems, Inc. 621 East Plainfield Road, Countryside, Illinois 60525. Phone: (312) 482-9696. (In England: Greycaines Industrial Estate, Watford, U.K. WD24QQ) TLX8813496.

FSI
Fleetwood Systems, inc.

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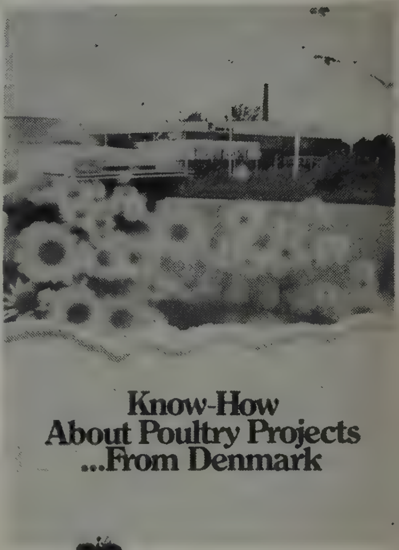
Literature / Literatur / Littérature / Literatura



A Danish cooperative for the breeding, rearing and hatching of poultry is described in this colorful brochure. Cooperative offers assistance in the following areas; feasibility studies, veterinary consultancy, constructional planning, financial planning and training of personnel. A total turnkey operation.—*Farre Food amba, Denmark.*

Circle 152

Beltweighers that provide accurate, continuous measurement of flow-rate and throughput of materials passing along a belt conveyor are described in brochure. Weigher uses load cells to measure belt loading and a digital transmitter to monitor belt speed and distance.—*Fischer Controls Ltd., London, England.*

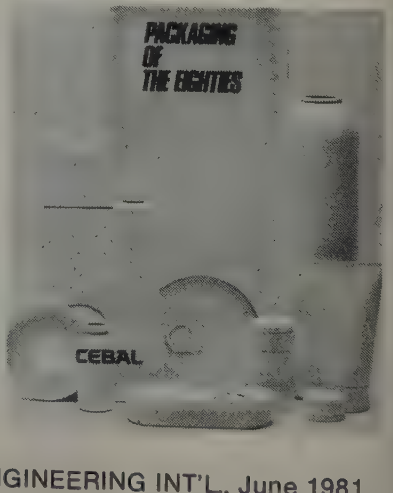
Circle 153

Pinch valve, designed to reduce rim pull and eliminate drifting in higher pressure applications is described in a two-page product sheet. Outlines valve features, applications, operation, construction and maintenance as well as listing dimensions and providing schematic illustrations.—*RKL Controls, Fluids Handling Division, Robbins & Myers, Inc. Lumberton, New Jersey, USA*

Circle 154

An automatic buret which allows instant control of titrant flow including filling, measuring and dispensing is described in brochure #BR 417.—*Brinkmann Instruments, Inc. Subsidiary of Sybron Corporation, Westbury, New York, USA*

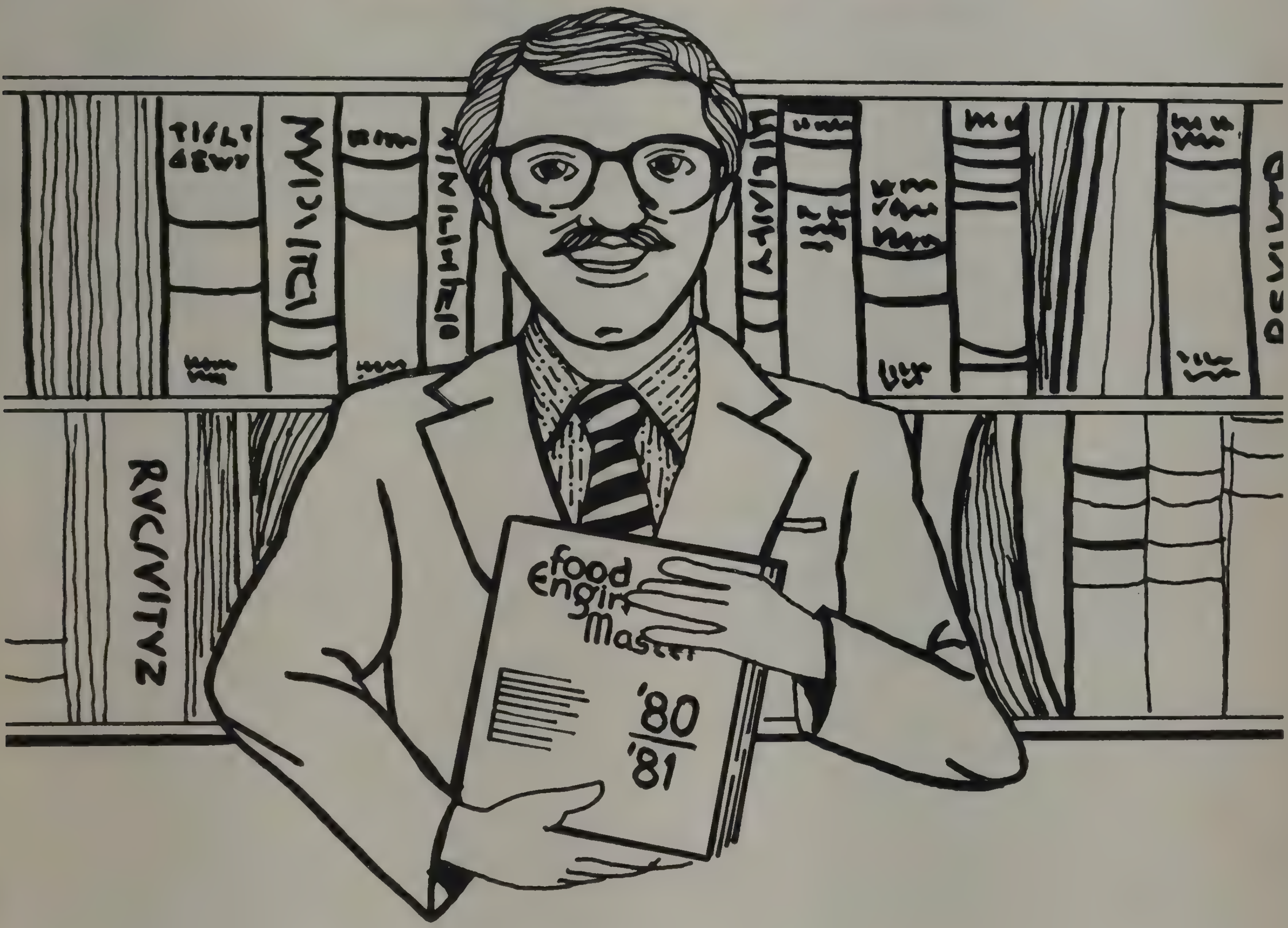
Circle 155



A wide range of rigid and semi-rigid aluminum, plastic and tin containers is described in brochure. Manufacturer offers customer technical assistance and know-how.—*Cebal, Clichy, France.*

Circle 156

Here's a textbook that won't gather dust on your shelf



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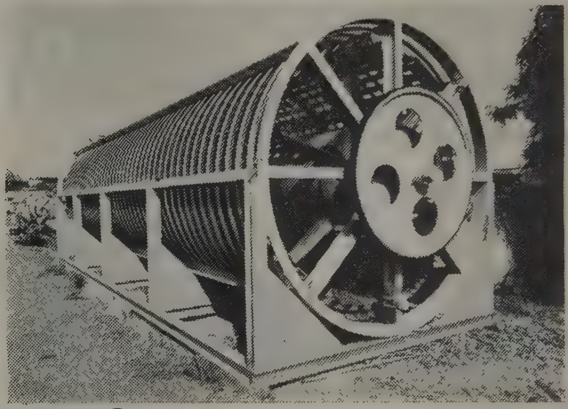

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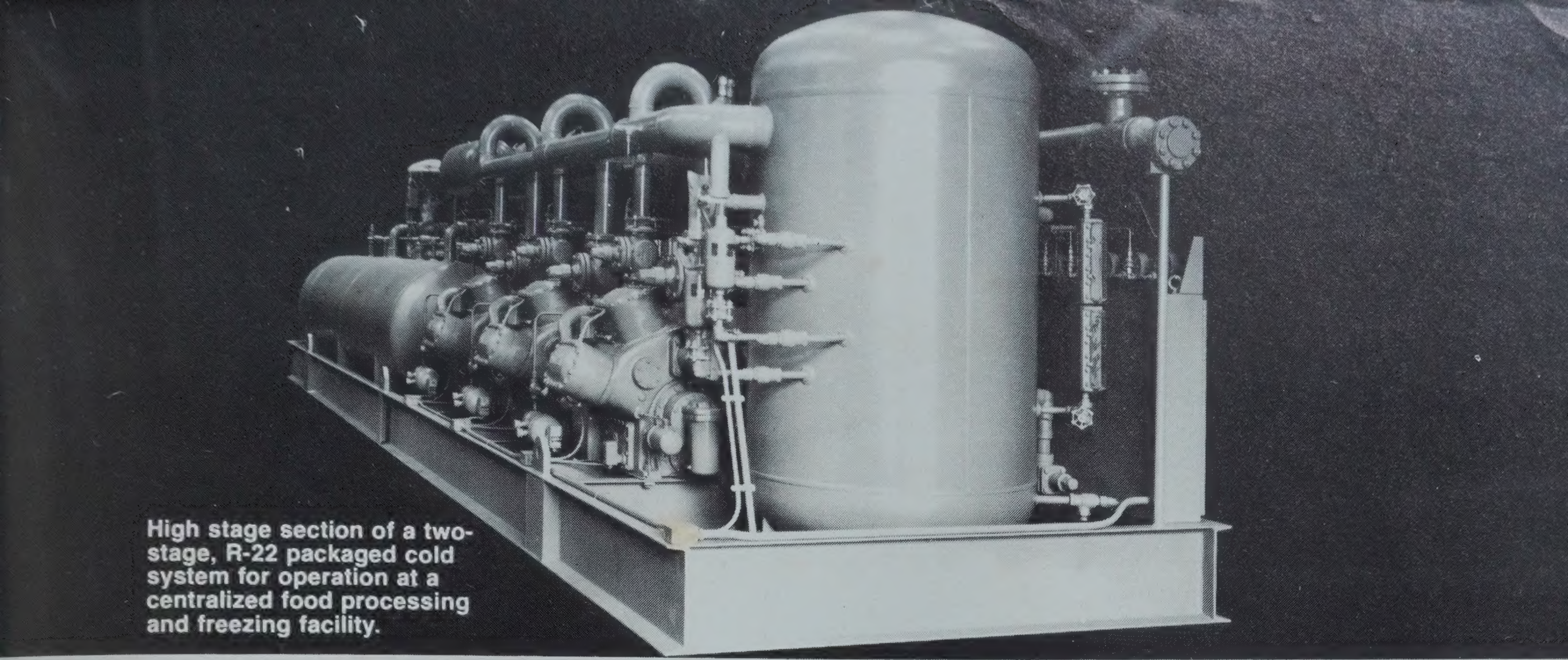

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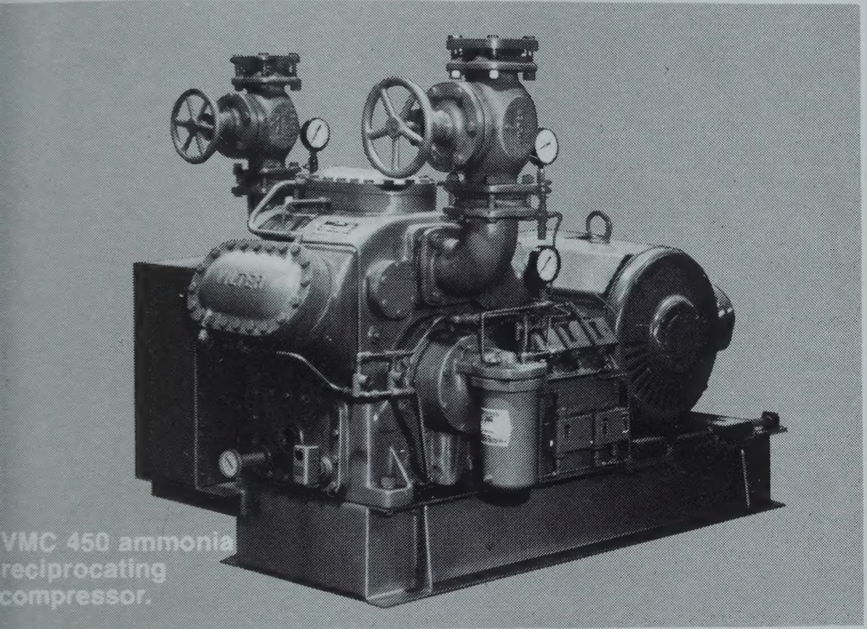

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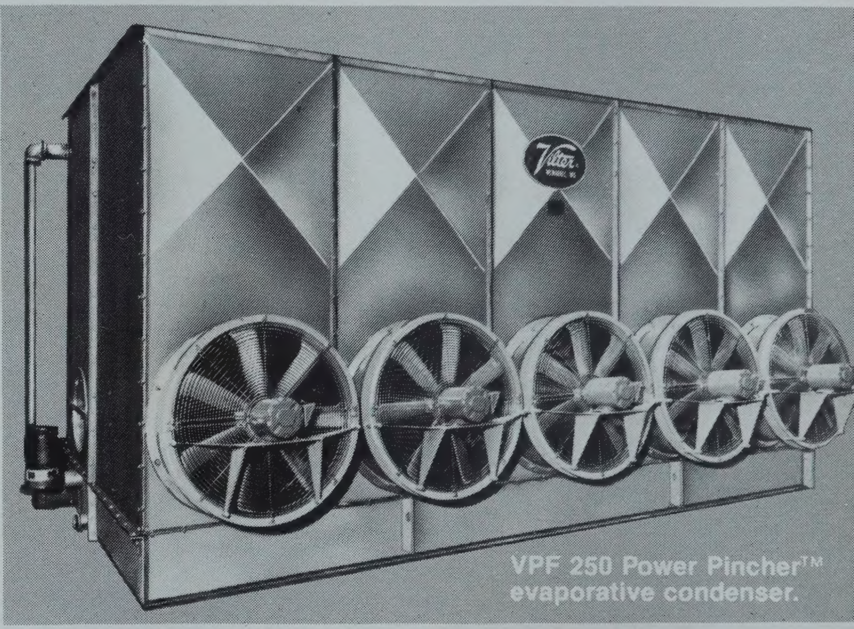

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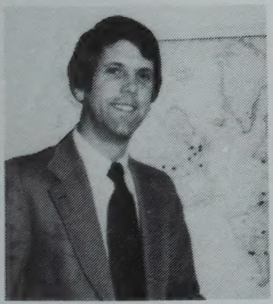

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